

AD-A199 229

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**INSTALLATION RESTORATION PROGRAM
PHASE II - CONFIRMATION/QUANTIFICATION
STAGE 2**

VOLUME IV

**LUKE AIR FORCE BASE,
ARIZONA**

**Roy F. Weston, Inc.
West Chester, Pennsylvania 19380**

JUNE 1988

FINAL REPORT FOR PERIOD SEPTEMBER 1986 TO JUNE 1988

Approved for Public Release; Distribution is Unlimited

PREPARED FOR:

**HEADQUARTERS TACTICAL AIR COMMAND
COMMAND SURGEON'S OFFICE (HQ TAC/SGPB)
LANGLEY AIR FORCE BASE, VIRGINIA**

**UNITED STATES AIR FORCE
OCCUPATIONAL & ENVIRONMENTAL HEALTH LABORATORY (USAFOEHL)
TECHNICAL SERVICES DIVISION (TS)
BROOKS AIR FORCE BASE, TEXAS 78235-5501**

**DTIC
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SEP 19 1988**

88 9 19 053

WATER ENGINEERING SERVICE


ELECTRIC LOG

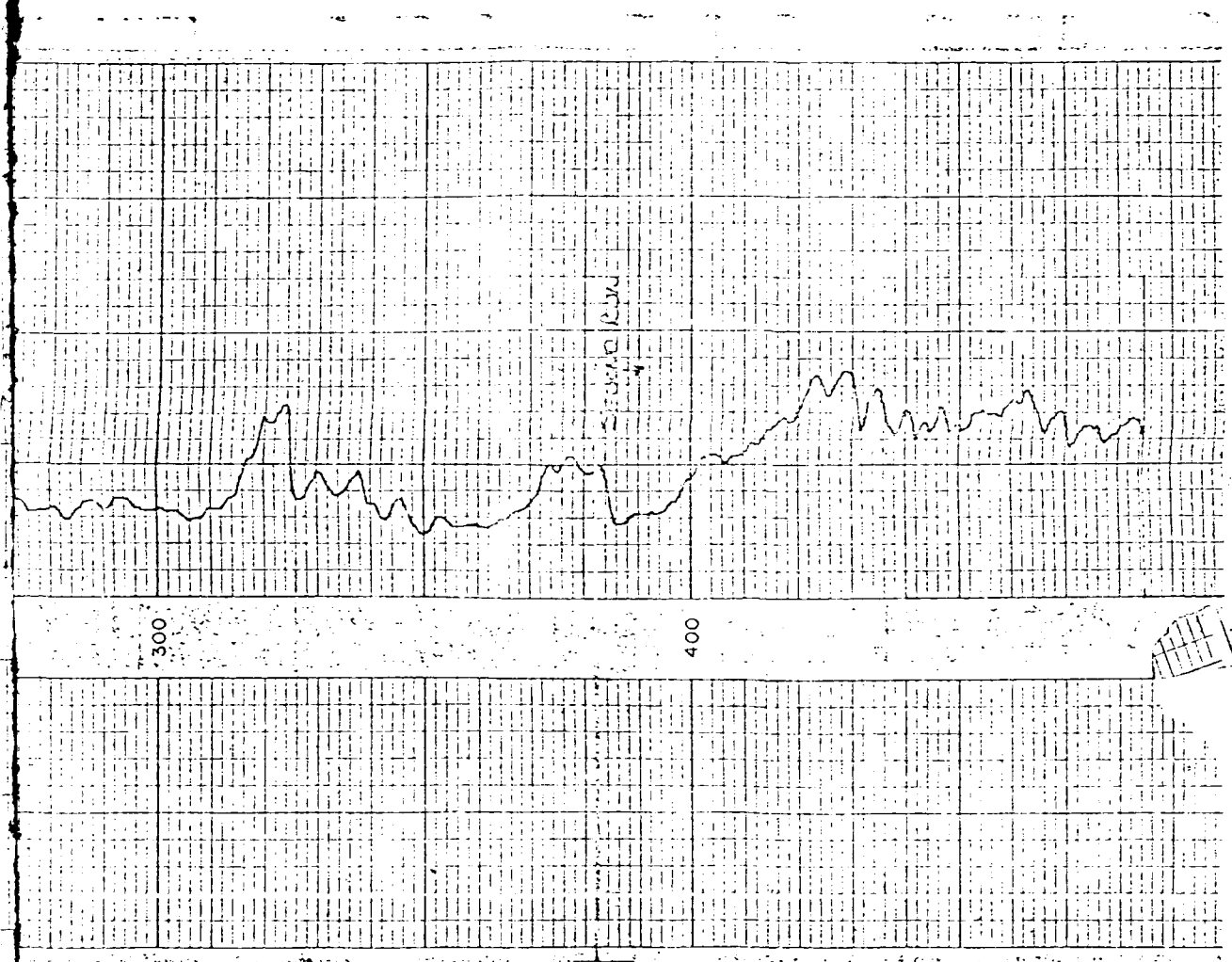
COMPANY <u>WILLIS TOWERS WORTH, INC.</u> WELL <u> </u> FIELD <u>1000 AIR FORCE BASE</u> STATE <u>ARIZONA</u> COUNTY <u>ARIZONA</u>	
LOCATION <u>WILLIS A.F.B.</u> SEC <u> </u> TWP <u> </u> RGE <u> </u>	OTHER SERVICES <u>E-LOG</u> <u>GAMMA-RAY</u> <u>CHLOR</u>
Permanent Datum: <u> </u> Elev. <u> </u> Log Measured From: <u> </u> <u>0</u> Ft. Above Perm. Datum Online Measured From: <u>(L)</u> <u> </u>	Elev.: <u>K.H.</u> <u>D.F.</u> <u>G.L.</u>

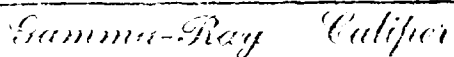
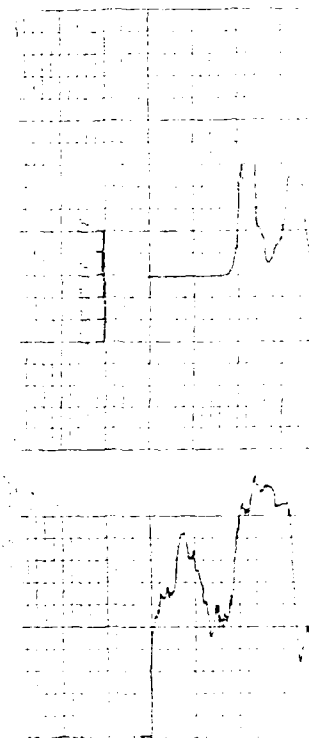
Date	10-29-86	10-30-86
Ran No.	NWE	(N)
Captain-Driller	775'	482.5'
Captain-Logger	837'	486'
Run Log Inter.	882'	486'
Top Log Inter.	901'	484'
Casing - Driller	911' @ 901'	500' @ 376'
Casing - Logger	-	519.9 @ 376'
B.T. Size	5 7/8"	5"
Type Fluid in Hole	WATER	WATER
Dyna Visc.	N/A	N/A
FH Fluid Loss	N/A ml	N/A ml
Source of Sample	HIT	HIT
R _o @ Meas. Temp.	12.3 @ 77 °F	13.0 @ 77 °F
R _g @ Meas. Temp.	12.3 @ 77 °F	13.0 @ 77 °F
R _u @ Meas. Temp.	12.4	13.2
Grains Mass R _u	N/A	M
T _m @ BHT	124 °F	125 °F
Time Since Circ.	1 min	1 min
Meas. Line Temp.	125 °F	125 °F
Sump Location	1	1
Recorded By	JANUARY	JANUARY
Witnessed By		

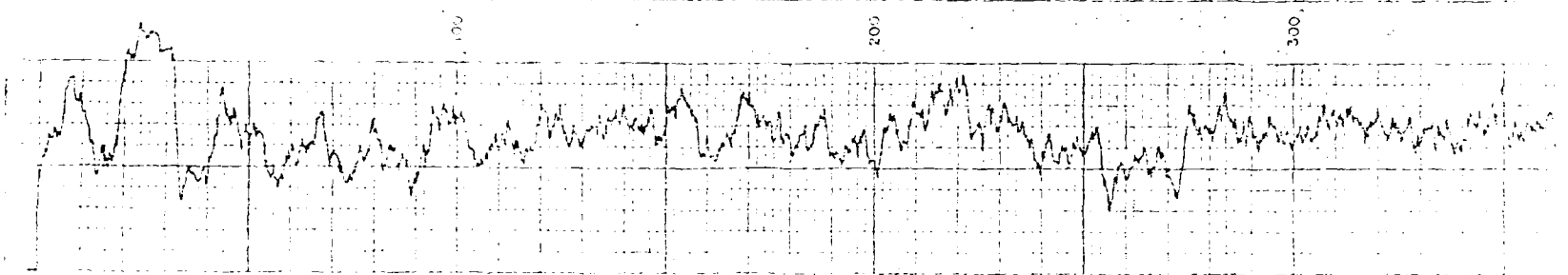
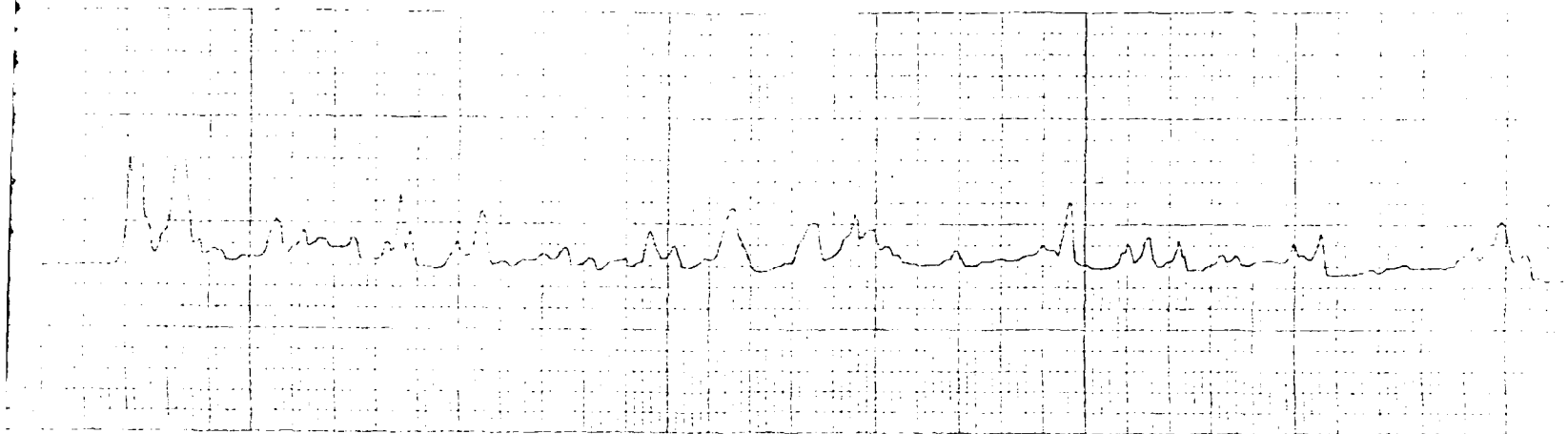
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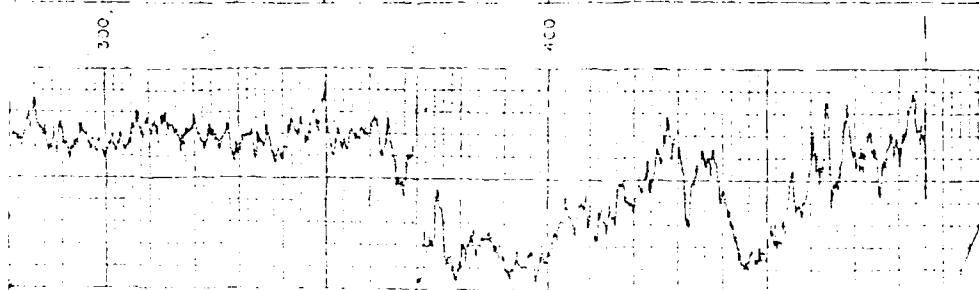
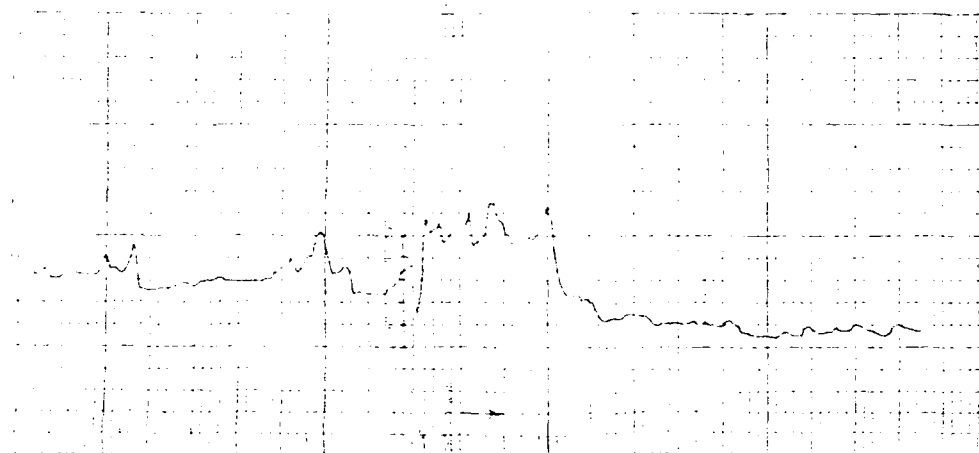
[illegible]

SPONTANEOUS POTENTIAL millivolts	Depth	RESISTIVITY ohms. m./m		RESISTIVITY ohms. m./m
		SHORT NORMAL 16 inch	LONG NORMAL 64 inch	
<div style="text-align: center;">  </div>		SHORT NORMAL 16 inch	LONG NORMAL 64 inch	



[illegible]





WELDON

ENGINEERS & SURVEYORS

ELECTRIC LOG

LOG NO.	COMPANY <u>EVANS DRILLING, INC.</u>	
	WRL <u>WELDON</u>	
	FIELD <u>UNIT 100, BAYVIEW</u>	
	STATE <u>MISSISSIPPI</u>	COUNTY <u>ST. LOUIS</u>
LOCATION <u>LUKE A. F. B.</u>	OTHER SERVICES <u>AT INITIAL</u> <u>DIAMETER</u> <u>LOGGING</u>	
SEC <u>TWO</u>	ONE	

Permanent Datum <u>G.L.</u>	Elev. <u>0</u>	Elect. <u>K.R.</u>
Log Measured From <u>G.L.</u>	PL Above Perm. Datum <u>0</u>	D.P. <u>0</u>
Drilling Measured From <u>G.L.</u>		G.L. <u>0</u>

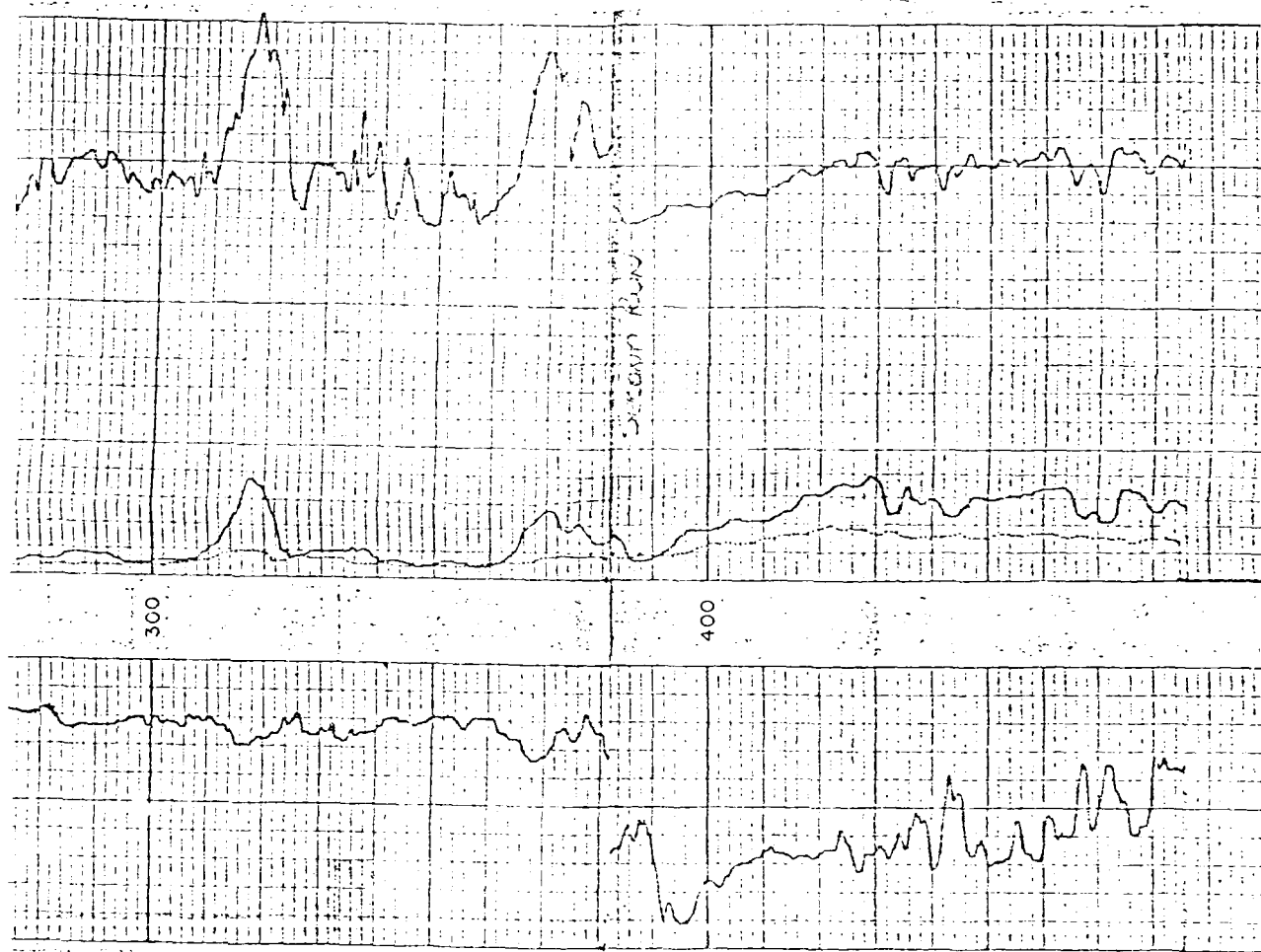
Date	10-20-56	10-20-56			
Run No.	100	100			
Depth-Driller	275'	282.5'			
Depth-Logger	275'	282.5'			
From Log Inter.	242'	250'			
Top Log Inter.	201'	201'			
Casing-Driller	100' @ 4 1/2"	100' @ 4 1/2"			
Casing-Logger	100'	100'			
Hole Size	6 1/2"	6 1/2"			
Type Fluid in Hole	MUD	MUD			
Core	100'	100'			
pH	Fluid Loss	Fluid Loss			
Source of Sample	100'	100'			
Sp. W. Meas. Temp.	100'	100'			
Fluid Meas. Temp.	100'	100'			
R. W. Meas. Temp.	100'	100'			
Source R. W.	100'	100'			
R. W. EHT	100'	100'			
Time After Circ.	100'	100'			
X-ray Meas. Temp.	100'	100'			
No. of Observation	100'	100'			
Drilled by	100'	100'			
Witnessed by	100'	100'			

Scale Changes	Scale Up Hole	Scale Down Hole
Type Log	Depth	
Drill Sample No.		
Depth-Driller		
Type Fluid in Hole		
Core		
Sp. W. Meas. Temp.		
Fluid Meas. Temp.		
R. W. Meas. Temp.		
Source R. W.		
R. W. EHT		
Time After Circ.		
X-ray Meas. Temp.		
No. of Observation		
Drilled by		
Witnessed by		

SPONTANEOUS POTENTIAL	RESISTIVITY	RESISTIVITY
millivolts	ohms m/m	ohms m/m
	SHORT NORMAL	RESISTANCE
	60 inch	Depth Curve




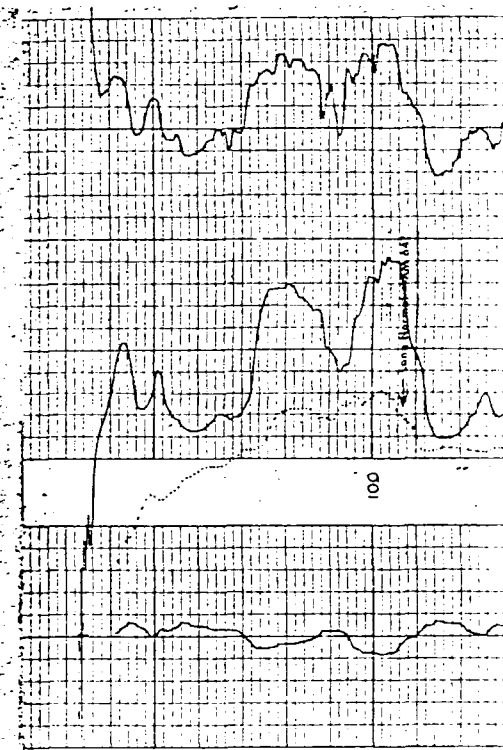




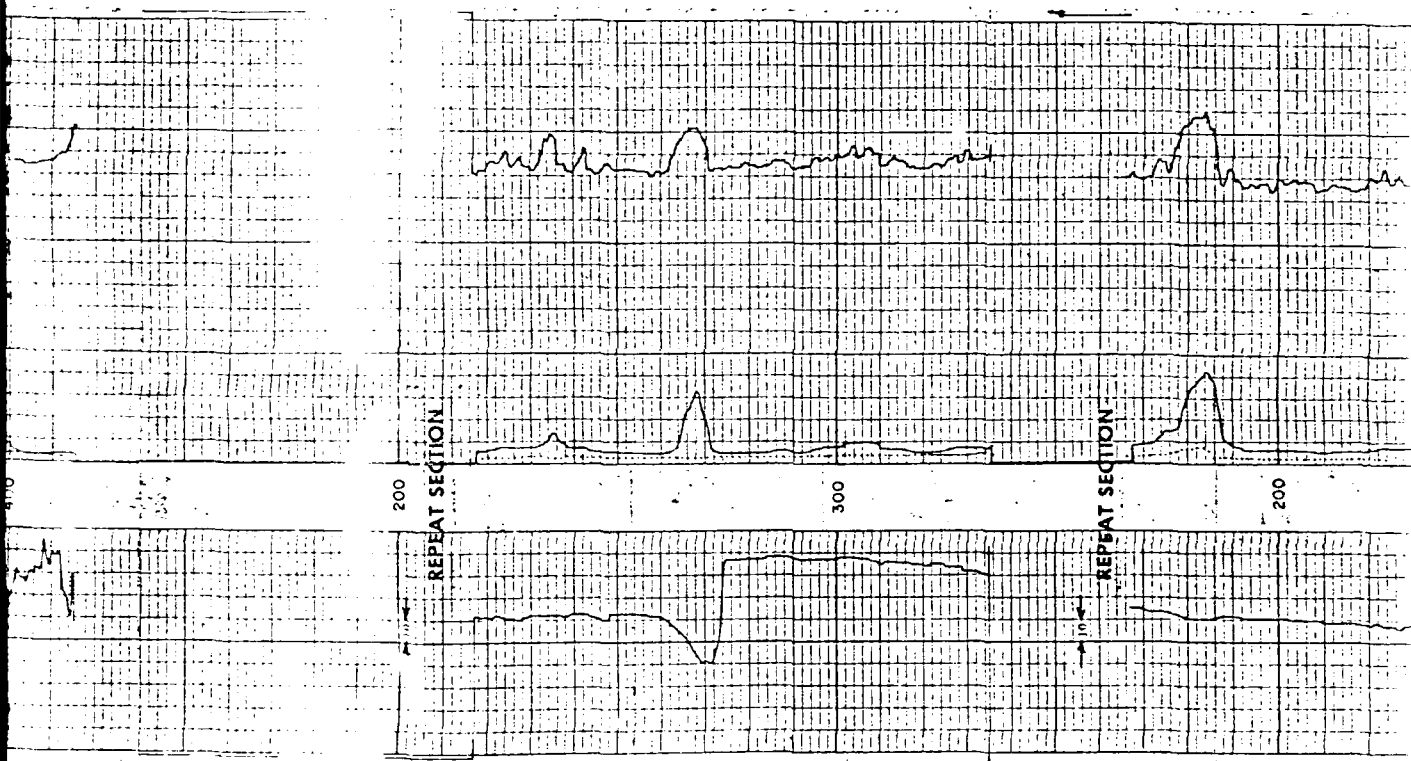


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SPONTANEOUS POTENTIAL millivolt	Depth	RESISTIVITY ohms. m./m.	RESISTIVITY ohms. m./m.
	SHORT NORMAL 16 inch	50	RESISTANCE Detail Curve
	LONG NORMAL 64 inch	50	









WELL ENGINEERING SURVEYS
ELECTRIC LOG

FILED NO	COMPANY <u>MEYLIK DRILLING, INC.</u> WELL <u>103</u> FIELD <u>LUKE AIR FORCE BASE</u> STATE <u>ARIZONA</u> COUNTY <u>MAHICOPA</u>	
	LOCATION: SEC <u>1</u> TWP <u>1</u> RGE <u>1</u>	OTHER SERVICES CALIPER GAMMA-RAY E-LOG

Permanent Datum: G.L. Elev.
 Log Measured From G.L., 0 Ft. Above Perm. Datum Elev.: K B
 Drilling Measured From G.L. D.F.
 G.L.

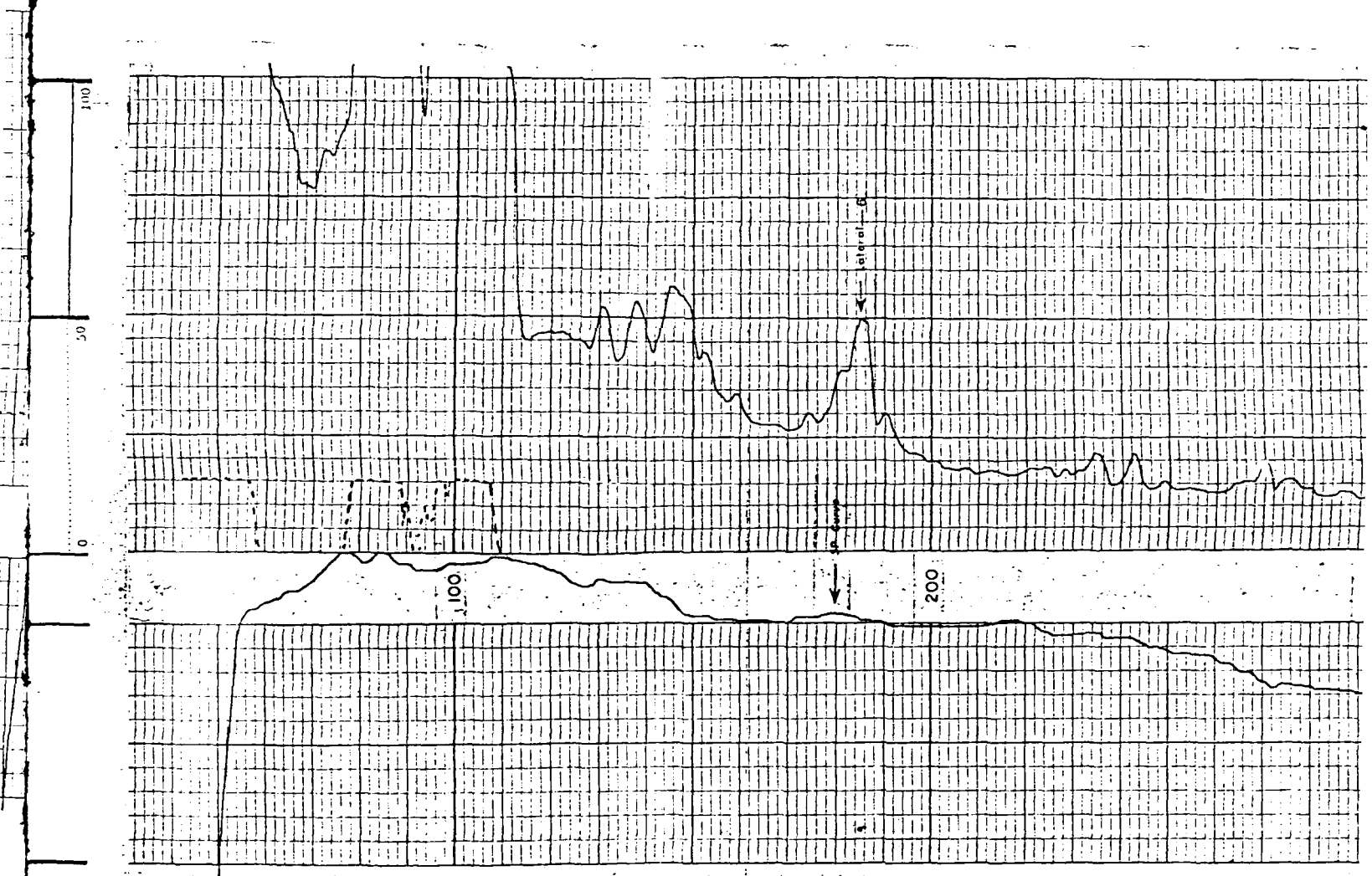
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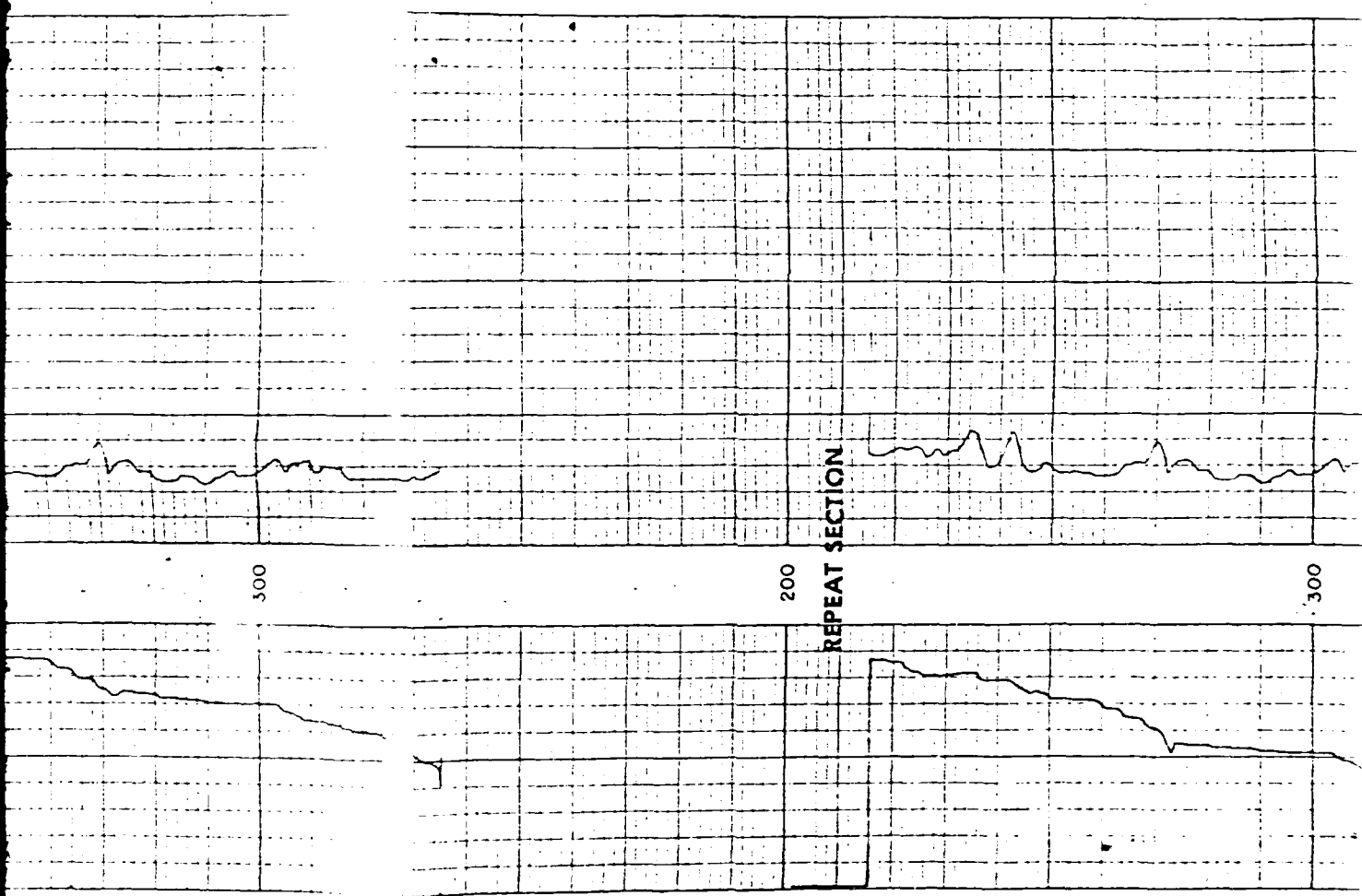
Fold Here **This Heading and Log Conform To API RP 31**

REMARKS-

Changes in Mud Type or Additional Samples										Scale Changes				
Date Sample No.	Depth—Driller		Type Fluid in Hole		Dens.	Visc.	ph	Fluid Loss	Source of Sample	Run No.	Tool Type	Tool Position	Scale Up Hole	Scale Down Hole
								ml		F	L	1 R.C.		
									R. @ Meas. Temp.	F	L			
									R. @ Meas. Temp.	F	L			
									R. @ Meas. Temp.	F	L			
									Source: R. R.					
									R. @ BIT	F	L			
									R. @ BIT	F	L			
									R. @ BIT	F	L			
									R. @ BIT	F	L			

SPONTANEOUS POTENTIAL millivolts	Depths	RESISTIVITY ohms. m'/m	RESISTIVITY ohms. m'/m
			RESISTIVITY ohms. m'/m
			6' LATERAL







WELL ENGINEERING SURVEYS

Gamma-Ray Caliper

COMPANY		BEVLIK DRILLING, INC.	
WELL		103	
FIELD		LUKE AIR FORCE BASE	
STATE		ARIZONA	
COUNTY		MARICOPA	
LOCATION		LUKE A.F.B.	
SPEC		TYPE	
OTHER SERVICE		E-LOG LATERAL	
PRELIMINARY DATE		G.L.	
LOG MEASURED FROM		G.L.	
DEPT. MEASURED FROM		G.L.	
DATE		10-26-86	
RUN NO.		ONE	
TYPE LOG		GAMMA-CALIPER	
DEPTH-LOGS		346'	
DEPTH-LOGS		336'	
SECTION LOGS		335'	
TOP LOGS		0'	
TYPE FLUID IN HOLE		WATER	
MAX. SEC. TEMP., DEG. F.		N/A	
RECORDED BY		CORRELL	
WITNESSED BY		MR. S.E. JAKATT	
DATE		10-28-86	
RUN NO.		TWO	
TYPE LOG		GAMMA-CALIPER	
DEPTH-LOGS		420'	
DEPTH-LOGS		419'	
SECTION LOGS		417'	
TOP LOGS		350'	
TYPE FLUID IN HOLE		WATER	
MAX. SEC. TEMP., DEG. F.		N/A	
RECORDED BY		CORRELL	
WITNESSED BY		MR. G. HILL	

BORE-HOLE RECORD				CASING RECORD			
NO.	BT	FROM	TO	NO.	WT.	FROM	TO
1	14 3/4	SURFACE	20'	10"		SURF.	20'
2	7/8	20'	346'				
3	"	346'	420'	6 5/8		SURF.	350'

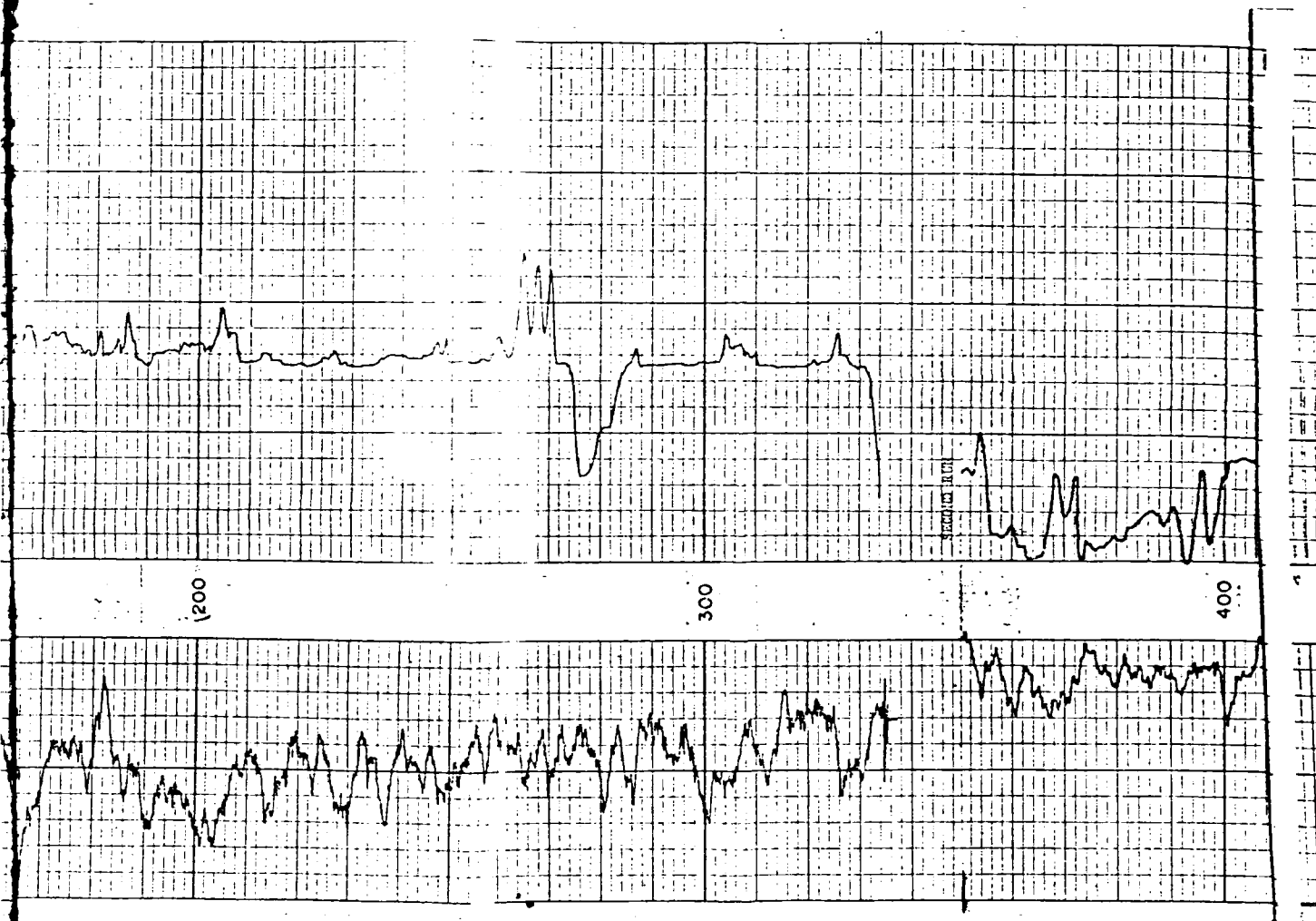
EQUIPMENT DATA									
Gamma Ray					Neutron				
Run No.	Tool Model No.	Diameter	Type	Length	Run No.	Tool Model No.	Diameter	Type	Length
1	GCN7AXL65	1 11/16"	GM	18"					
General					General				
Hurst Truck No. 101					Hurst Truck No. 101				
Instrument Truck No. 101					Instrument Truck No. 101				
Tool Serial No.					Tool Serial No.				


LOGGING DATA									
Gamma Ray					Neutron				
Run No.	Depth	Speed	T.C.	Sens.	Run No.	Depth	T.C.	Sens.	API N. Units
	From	To		Settings				Settings	per Log Div.
1	312'	20'	3	250					
2	417'	350'	3	250					

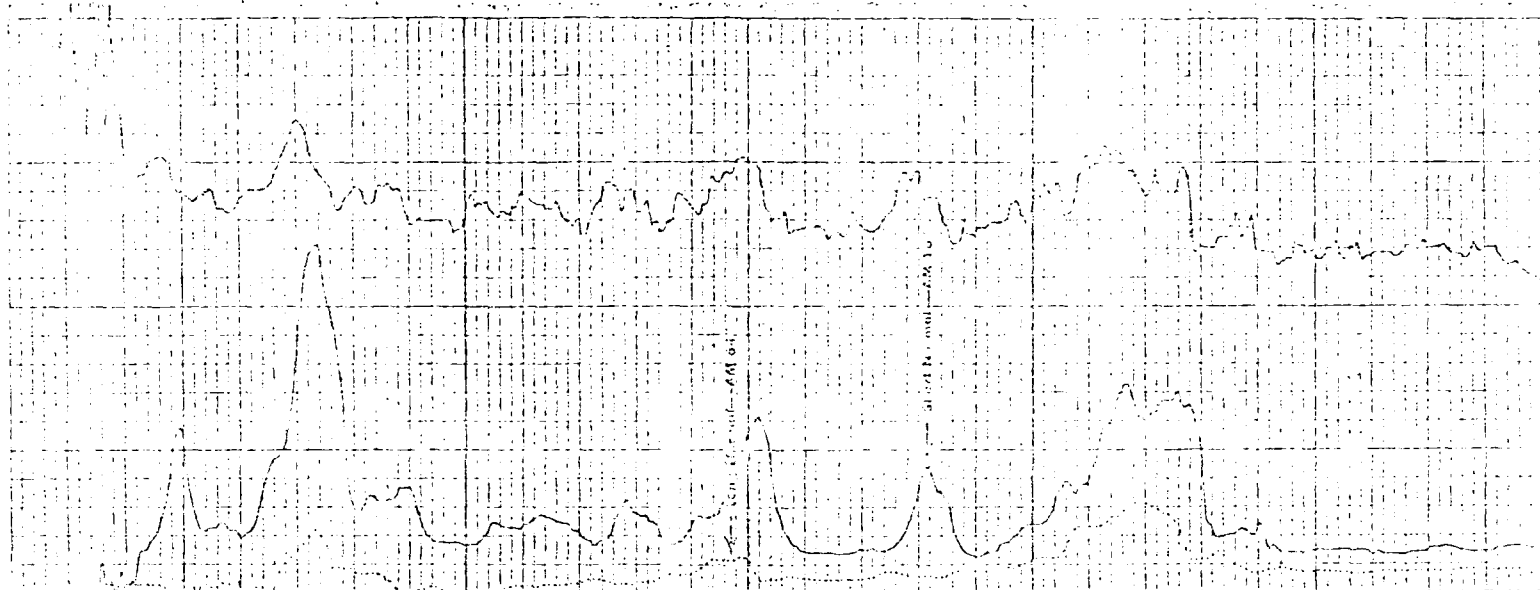
Reference Literature:	
Remarks:	

DEPTH		CALIPER	
GAMMA-RAY		INCHES	
API GAMMA-RAY UNITS		280'	

The image displays two ECG strips. The top strip features a vertical scale on the left with markings at 8, 9, 10, 11, and 12. The bottom strip has a vertical scale on the right with markings at 100 and 120. Both strips show a regular rhythm with a rate of approximately 100 bpm. The top strip shows a standard ECG trace with a vertical scale on the left. The bottom strip shows a similar trace with a vertical scale on the right.



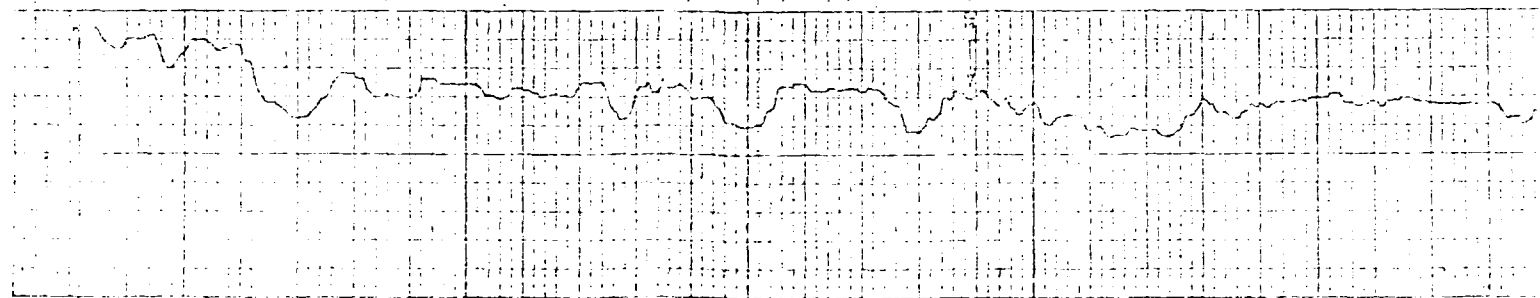
SIGNIFICANT POTENTIAL millivolts	Depth	RESISTIVITY ohms, m/m	RESISTIVITY ohms, m/in.
		SHOULDER NORMAL	
		5	
		LOCAL NORMAL	RESISTANCE DECREASE
		5	

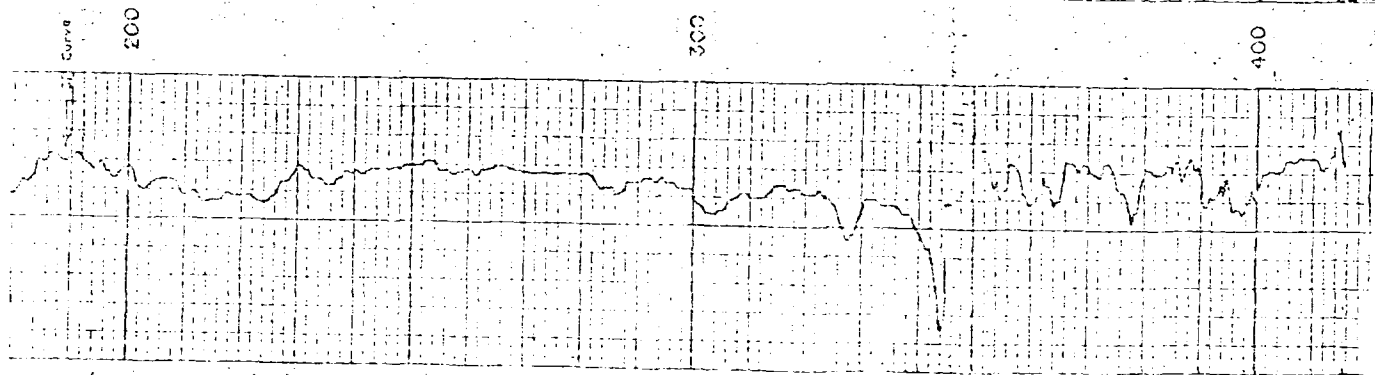
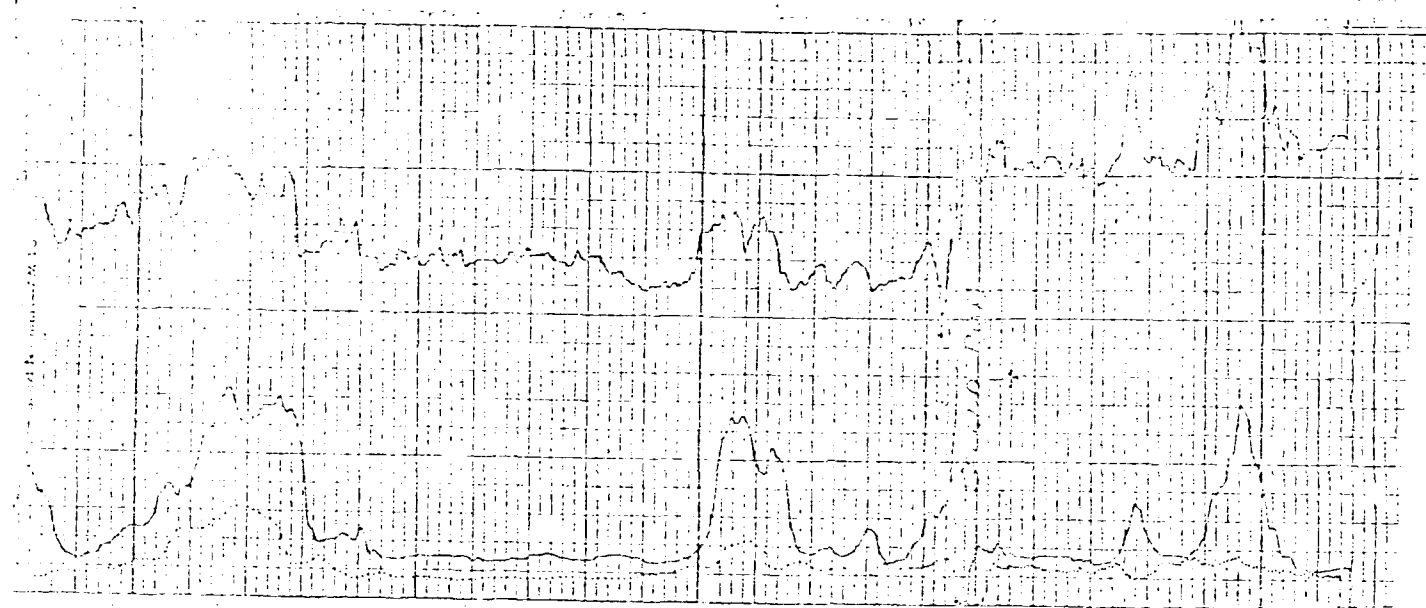


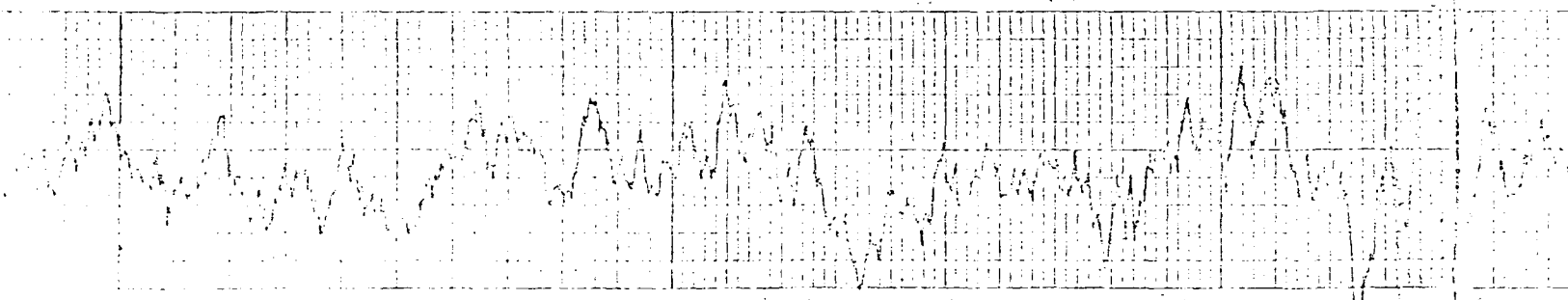
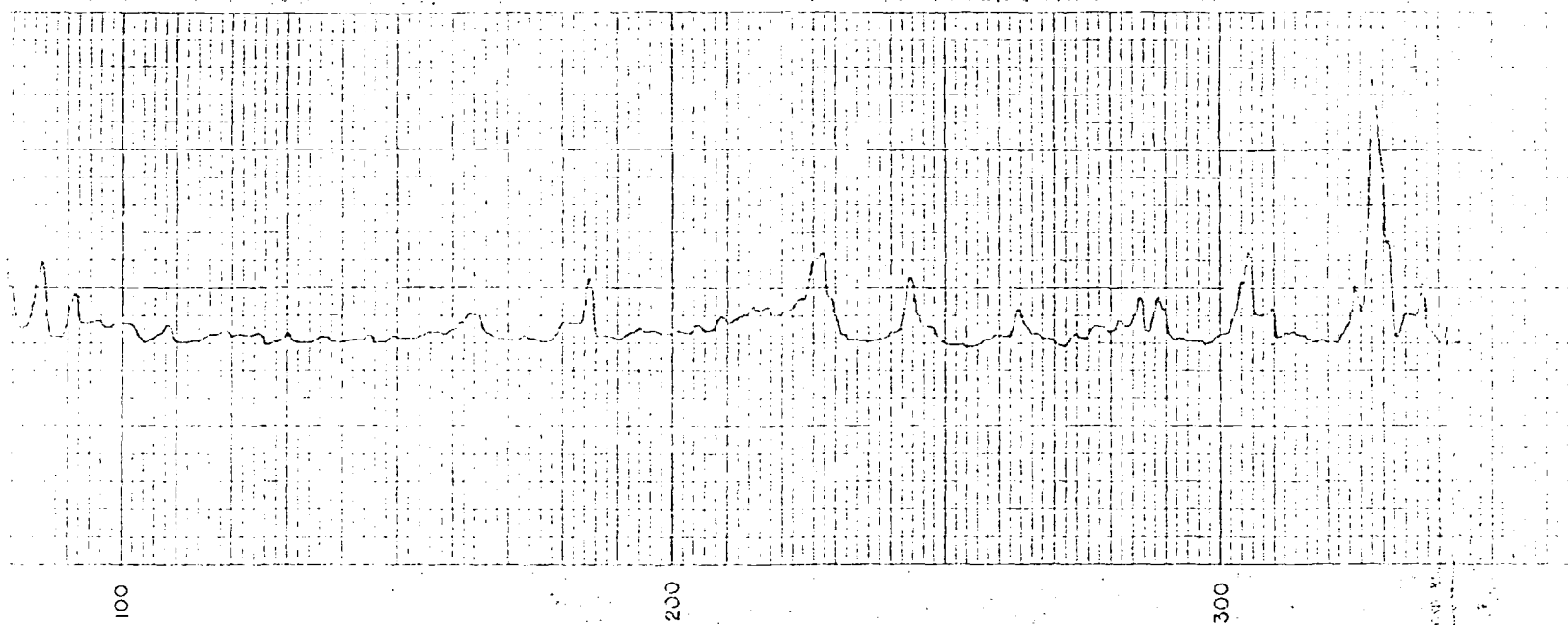
100

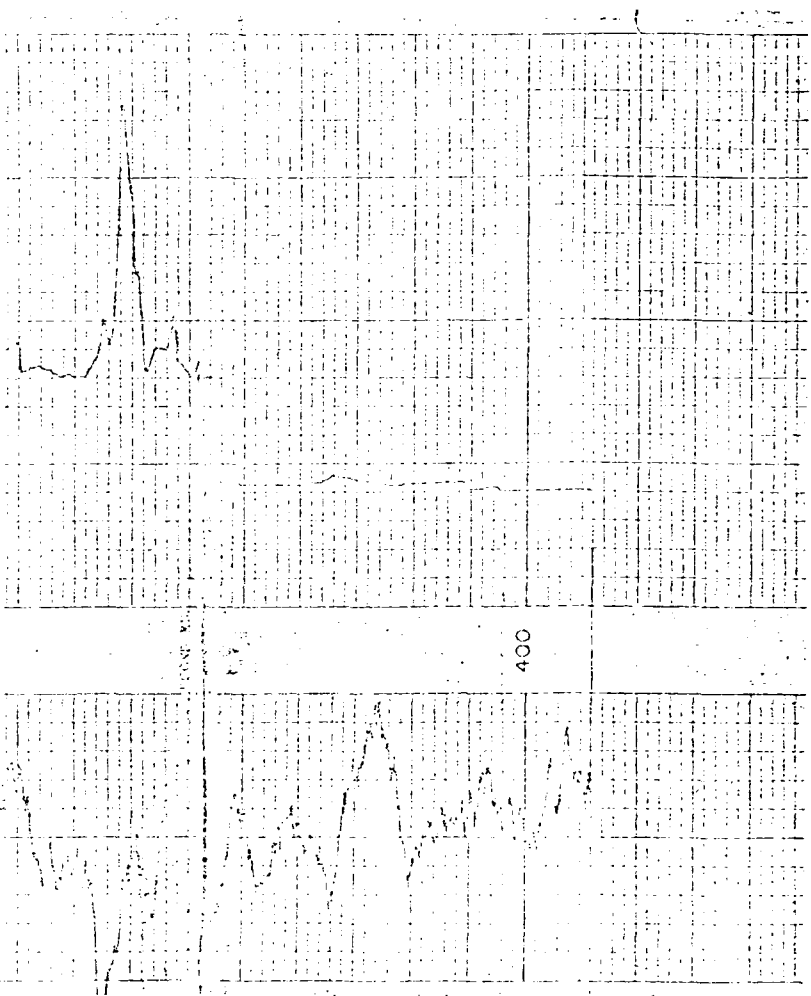
Curve

200



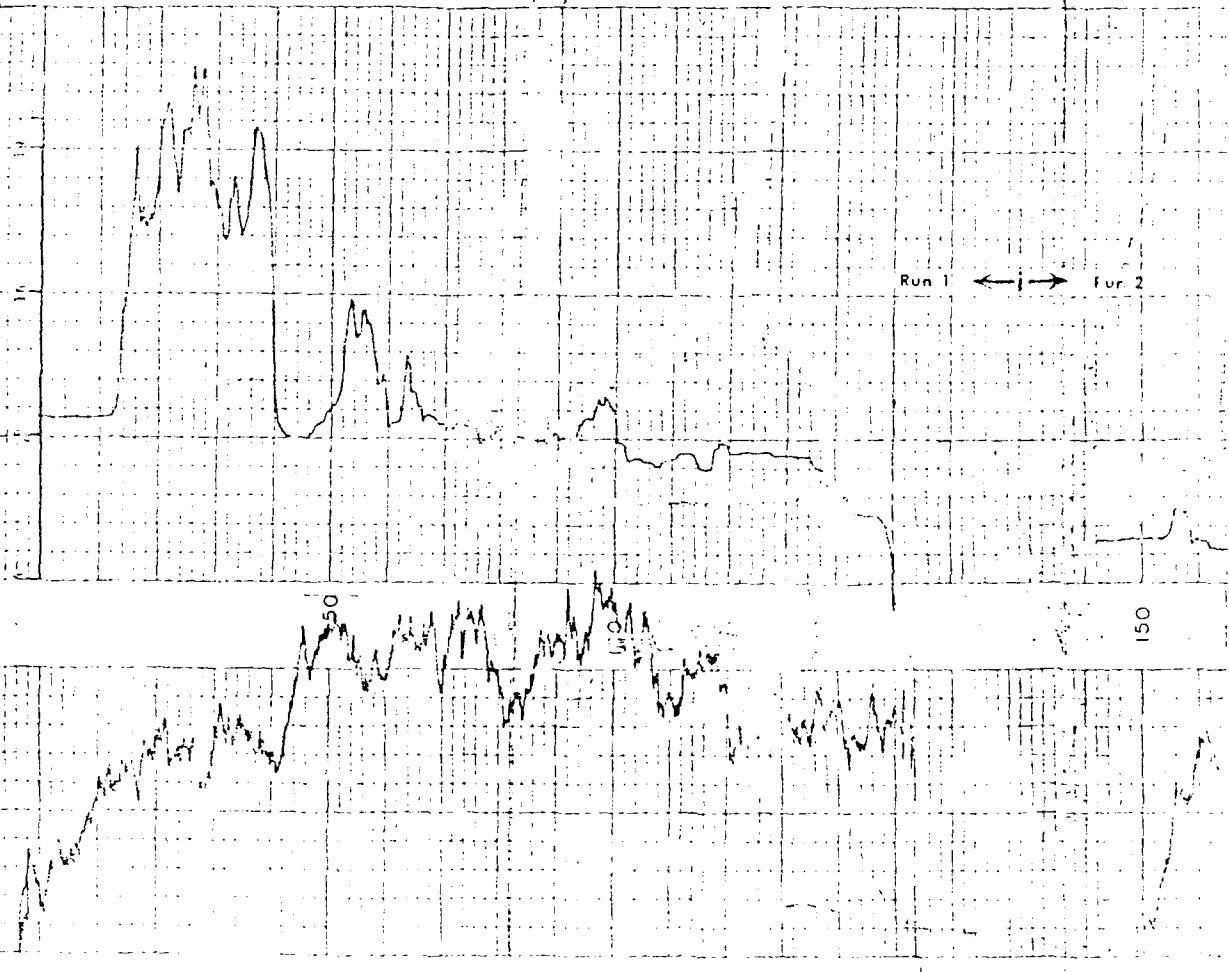






10-00000

CUTTER TYPE	DEPTH	CUTTER TYPE



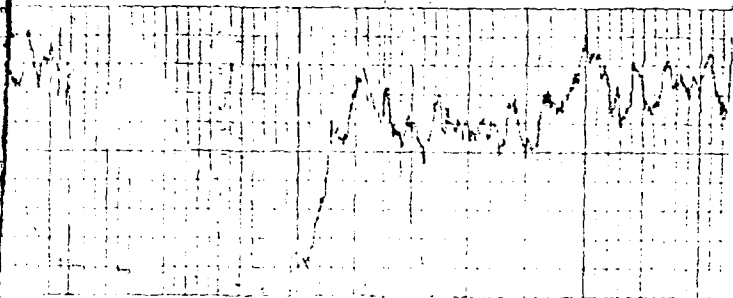
Run 1




For 2

150

200





WELL ENGINEERING SURVEYS

ELECTRIC LOG


FIRM NO.	COMPANY <u>ROYLIN DRILLING</u>		
	WELL NO. <u>13</u>		
	FIELD <u>LUKE AIR FORCE BASE</u>		
	STATE <u>ARIZONA</u>	COUNTY <u>MARICOPA</u>	
LOCATION	<u>LUKE A.F.B.</u>		Other Services <u>CANPA RAY</u> <u>CALIPER</u>
SEC <u> </u>	TWP <u> </u>	RGE <u> </u>	

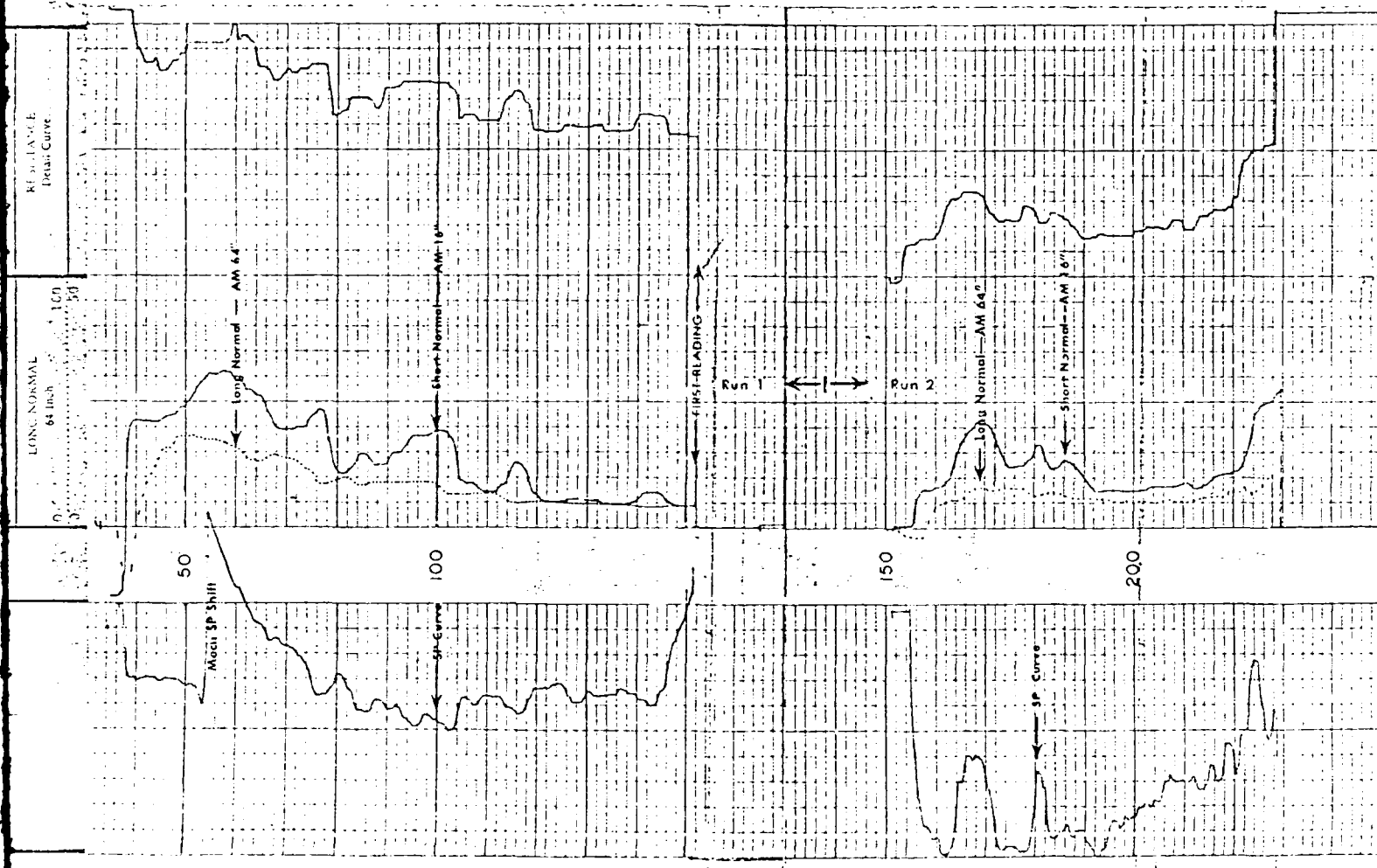
Perm. West Datum: <u>C.L.</u>	Elev. <u> </u>	Elev. <u>K.R.</u>
Log Measured From <u>C.L.</u>	0' PL. Above Perm. Datum	D.F. <u> </u>
Drilling Measured From <u>C.L.</u>		G.L. <u> </u>

Run No.	<u>12-2-86</u>	<u>12-2-86</u>		
Depth—Driller	<u>100'</u>	<u>100'</u>		
Depth—Logger	<u>100'</u>	<u>100'</u>		
Min. Log Inter.	<u>100'</u>	<u>100'</u>		
Top Log Inter.	<u>100'</u>	<u>100'</u>		
Casing—Driller	<u>100' @ 1 1/2"</u>	<u>100' @ 1 1/2"</u>		
Casing—Logger				
Rt. Size				
Type Fluid in Hole	<u>WATER</u>	<u>WATER</u>		
Temp. Visc.				
pH Fluid Loss				
Source of Sample	<u>100'</u>	<u>100'</u>		
R. @ Meas. Temp.	<u>100'</u>	<u>100'</u>		
R. @ Meas. Temp.	<u>100'</u>	<u>100'</u>		
R. @ Meas. Temp.	<u>100'</u>	<u>100'</u>		
Source Res. Res.	<u>100'</u>	<u>100'</u>		
R. @ BHT	<u>100'</u>	<u>100'</u>		
Time Since Cure				
Heat Res. Temp.	<u>100'</u>	<u>100'</u>		
Equip. Location	<u>100'</u>	<u>100'</u>		
Reviewed By				

This Heading and Log Conform To API RP 31 - 2

REMARKS		Scale Changes		Depth	Scale Up Hole		Scale Down Hole
		Type Log	Depth		Type Log	Depth	
Changes in Mud Type or Additional Samples							
Tool Bit Sample No.							
Tool Bit Sample							
Type Fluid in Hole							
Temp. Visc.							
pH Fluid Loss							
Source of Sample							
R. @ Meas. Temp.							
R. @ Meas. Temp.							
R. @ Meas. Temp.							
Source Res. Res.							
R. @ BHT							
Time Since Cure							
Heat Res. Temp.							
Equip. Location							
Reviewed By							

SPONTANEOUS POTENTIAL millivolts	Depth	RESISTIVITY ohms. m/ft	RESISTIVITY ohms. m/m
		SHORT NORMAL 10" - 16 inch	LONG NORMAL 64 inch - 100 inch
			



RF 301-15-1-1
Detail Curve

LONG NORMAL
64 Inch

100

50

50

100

150

200

Modi SP Shift

SP Curve

FIRST-READING

Run 1

Run 2

LONG NORMAL - AM 64°

SHORT NORMAL - AM 16°

SP Curve

ELECTRIC 729

COMPANY BRYLICKI ENTERPRISES

W511

FIELD. USE AIR PORT OK

STATE

LOCATION, LINE A-F, B.

5f C

 TWY

AGE

OTHER SERVICES
6" LATERAL
CALIPER
GAMMA RAY

Permanent Datum: C. L. Elev. _____

Log Measured From _____ G.C. _____ ft. Above Perm. Datum

Drilling Measured From. G.L.

Ex. 1: KR...

D.F.


G.L.

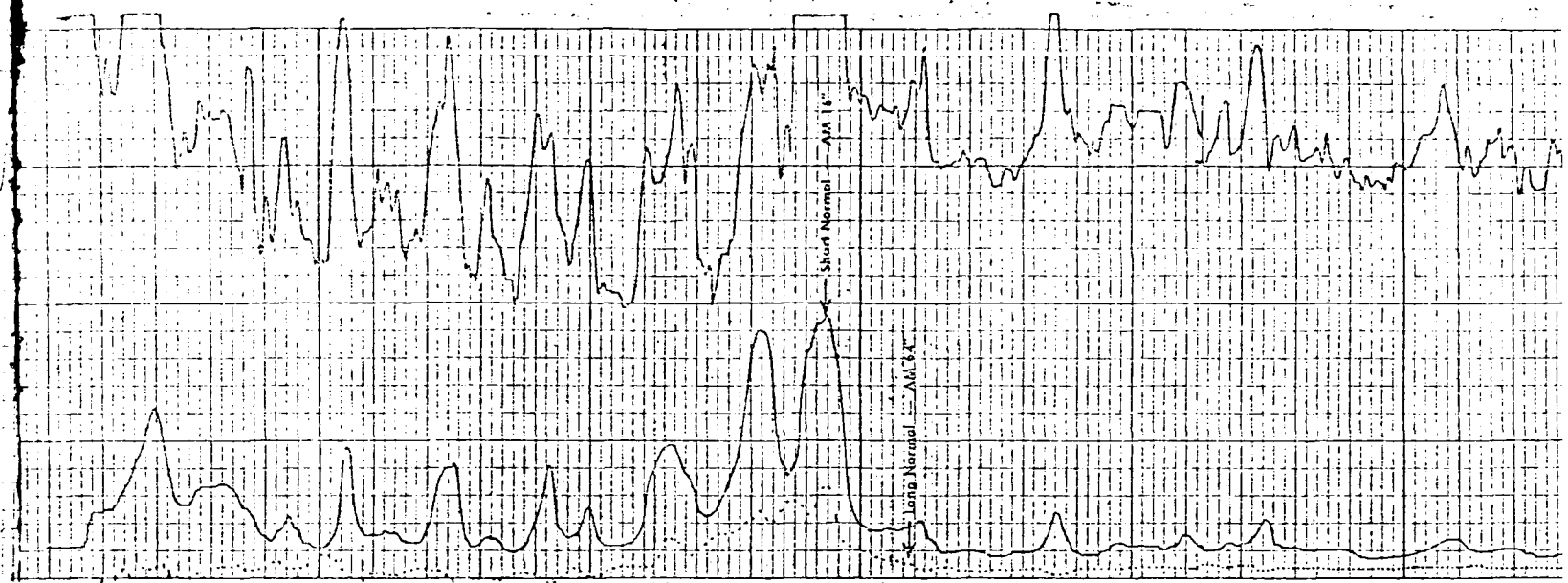
Crate	1-31-A6	11-26-A6			
Run No.	089	140			
Tooth—Driller	370'	532'			
Seph.—Logger	382'	533'			
Btm. Log Inter.	364'	532'			
Top Log Inter.	391'	370'			
Casing—Driller	16'' @ 21'	6 5/8" @ 27 1/2'			
Casing—Logger	16'' @ 21'	6 5/8" @ 27 1/2'			
Bit Size					
Type Fluid in Hole	WATER	WATER			
Dura.	Visc.				
pH	Mud Loss	ml	ml	ml	ml
Source of Sample					
P. @ Wase Temp.					
Rat. @ Wase Temp.					
Tm. @ Wase Temp.					
Source, Rat.					
Rat. @ BHT					
Time Since Circ.					
Was R. Temp					
Equip. Location					
Controlled By					
Witnessed By					

This Heading and Log Conform To API RP 31 P

Changes in Kind and Type of Additional Samples

Charges in Mud Type or Additional Samples				Grain Charges			
Test Sample No.	Type	Depth	Type Log	Scale Up Hole	Scale Down Hole		
1	Drill						
2	Test Fluid In Hole						
3	Test Fluid In Hole						
4	Test Fluid In Hole						
5	Test Fluid In Hole						
6	Test Fluid In Hole						
7	Test Fluid In Hole						
8	Test Fluid In Hole						
9	Test Fluid In Hole						
10	Test Fluid In Hole						
11	Test Fluid In Hole						
12	Test Fluid In Hole						
13	Test Fluid In Hole						
14	Test Fluid In Hole						
15	Test Fluid In Hole						
16	Test Fluid In Hole						
17	Test Fluid In Hole						
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88	Test Fluid In Hole						
89	Test Fluid In Hole						
90	Test Fluid In Hole						
91	Test Fluid In Hole						
92	Test Fluid In Hole						
93	Test Fluid In Hole						
94	Test Fluid In Hole						
95	Test Fluid In Hole						
96	Test Fluid In Hole						
97	Test Fluid In Hole						
98	Test Fluid In Hole						
99	Test Fluid In Hole						
100	Test Fluid In Hole						

SPONTANEOUS POTENTIAL millivolts	Depth	RESISTIVITY ohms. m'/m	RESISTIVITY ohms. m'/m
		SHORT NORMAL 16 inch	
		LONG NORMAL 64 inch	
			RESISTANCE Detail Curve

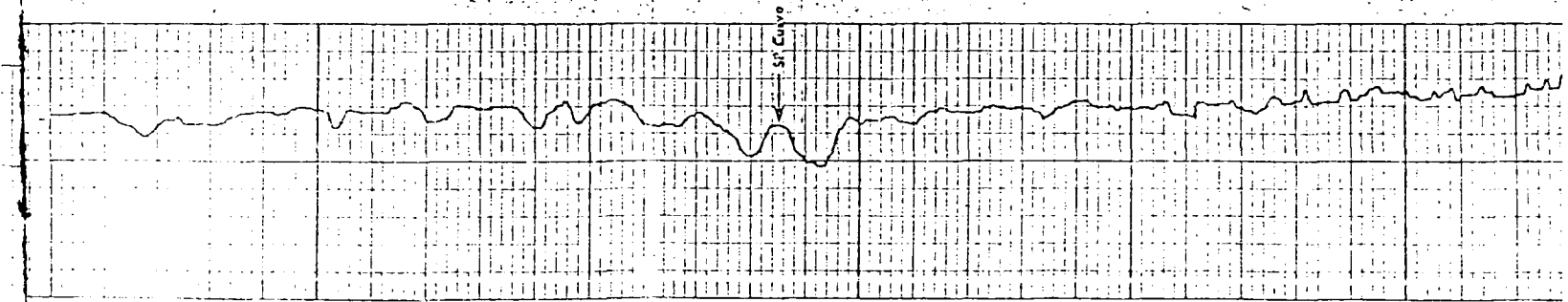


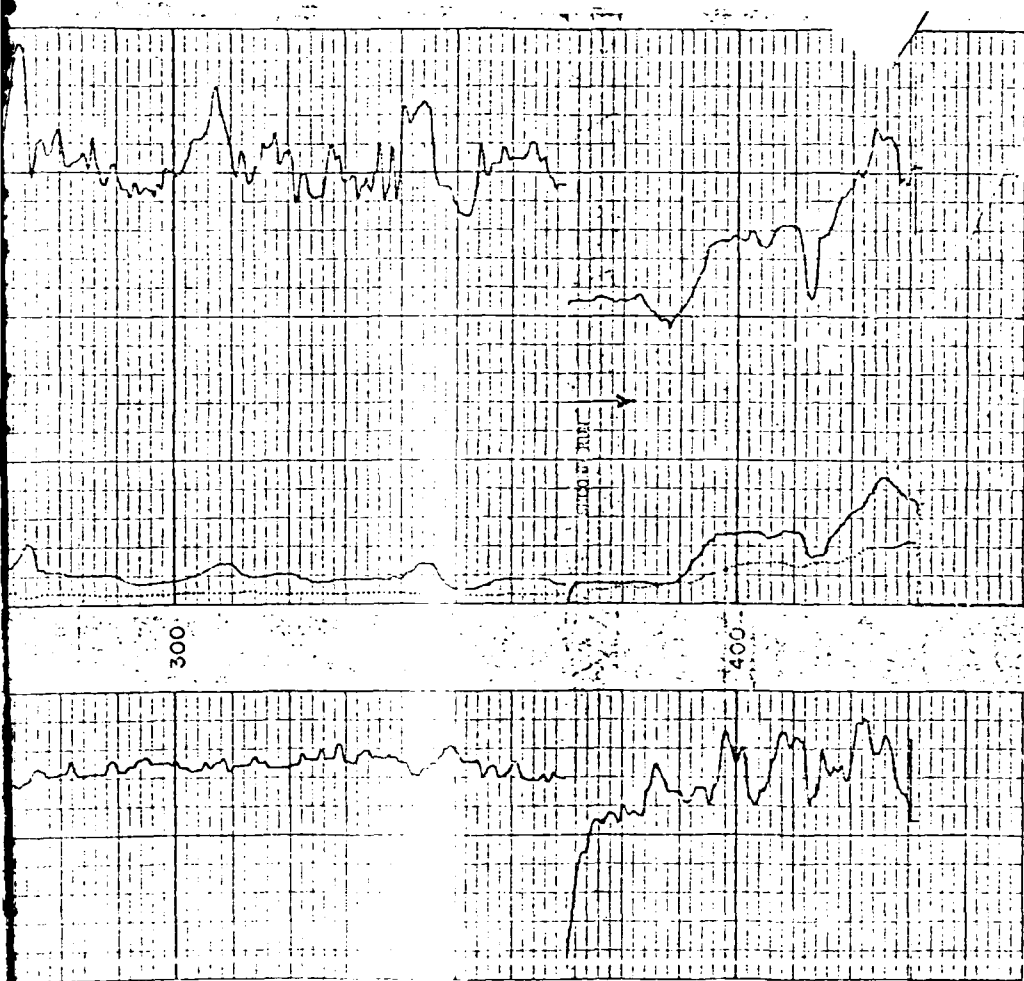
100

200

300

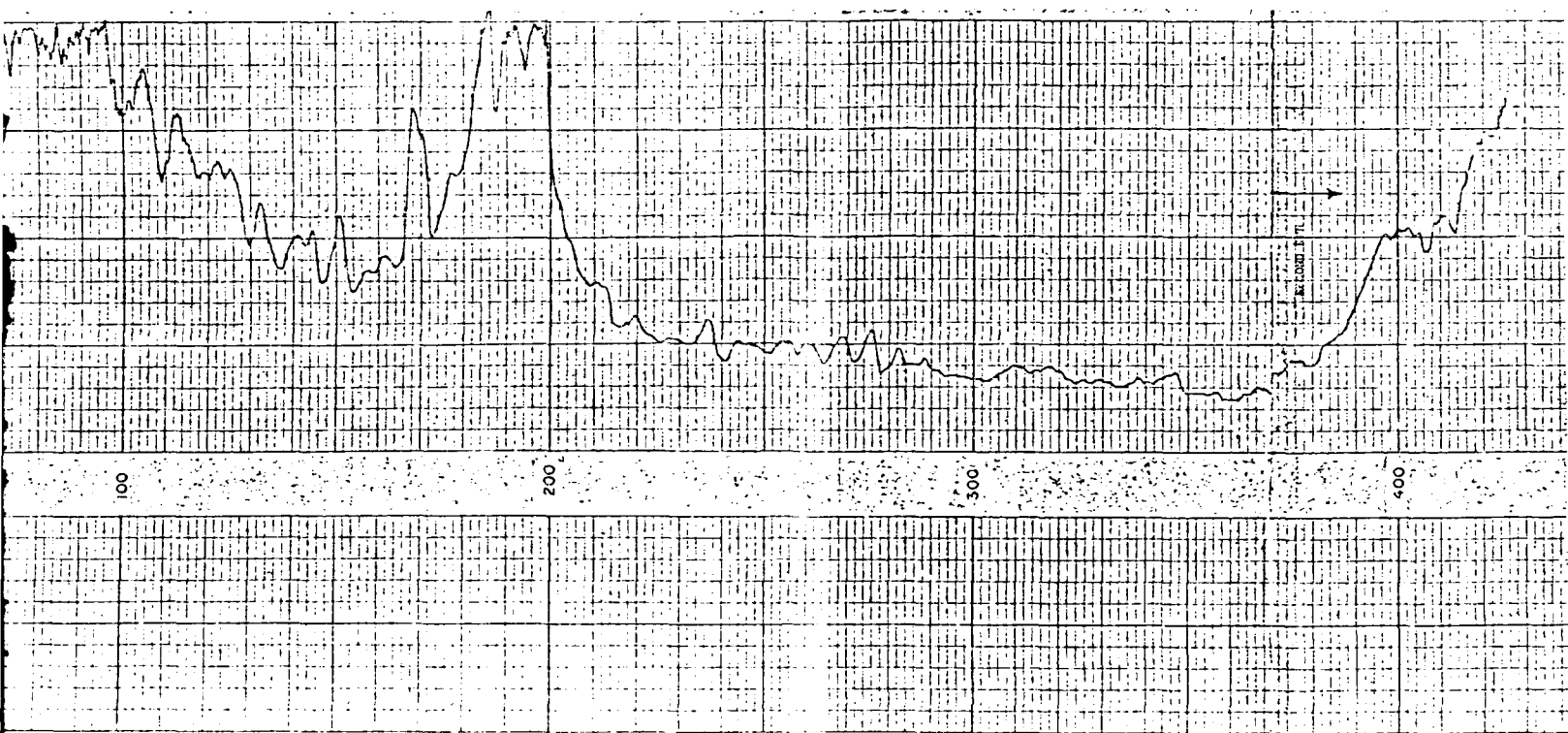
5th Curve

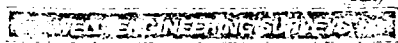




[illegible][illegible]

SPONTANEOUS POTENTIAL millivolts		RESISTIVITY ohms. m./m	
SPONTANEOUS POTENTIAL millivolts		RESISTIVITY ohms. m./m	





CONFIDENTIAL

LINE A Page. LINE A L I N E. GRADE: 6
ELECTRIC LOG
6' LAT. RAL.

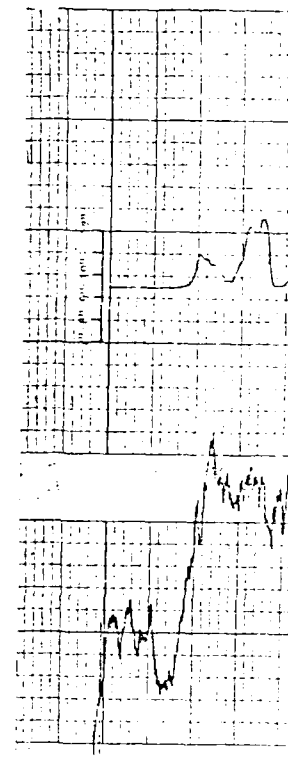
Doc ID	101-31-75	11-2-26
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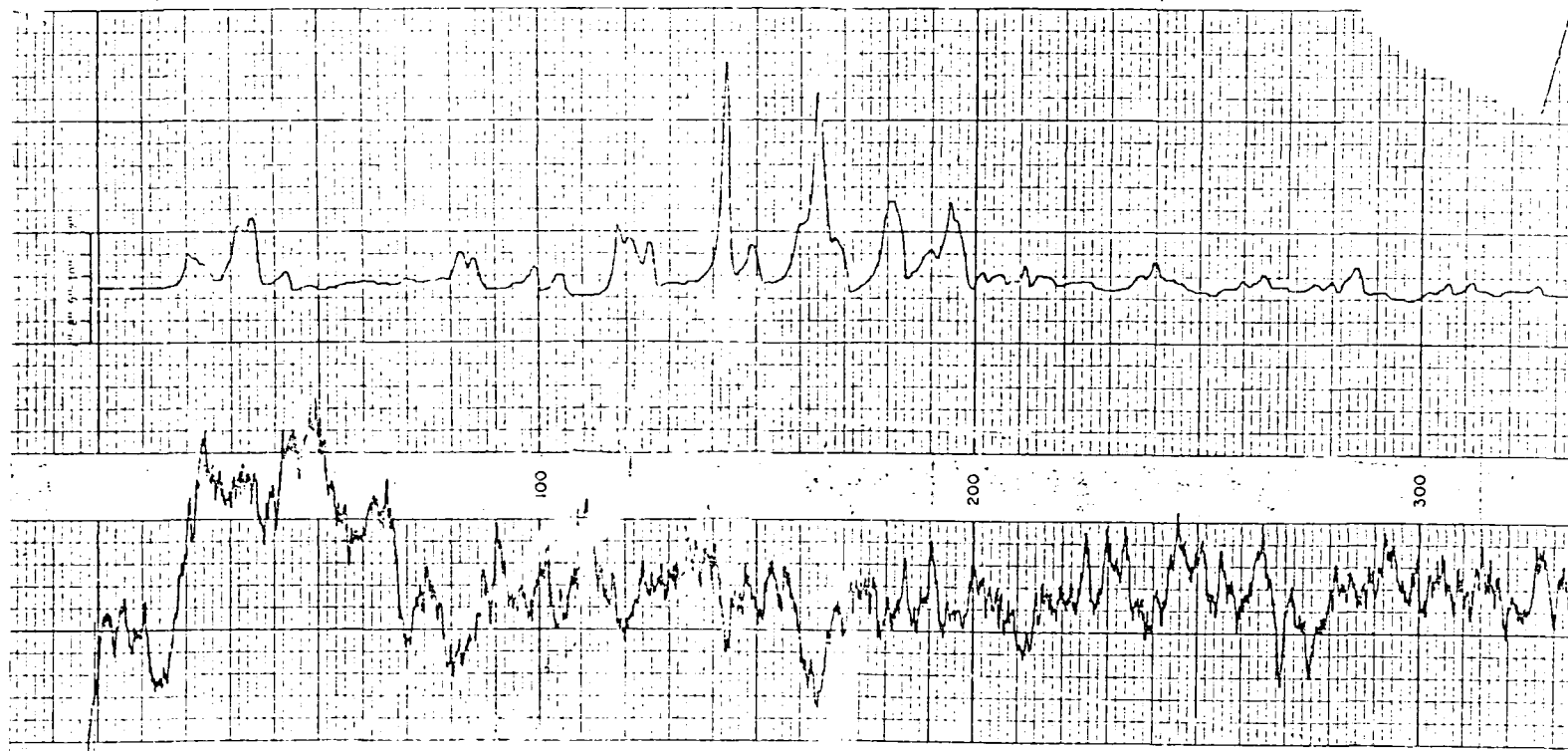
DATE	DOWN-HOLE RECORD	CASING RECORD
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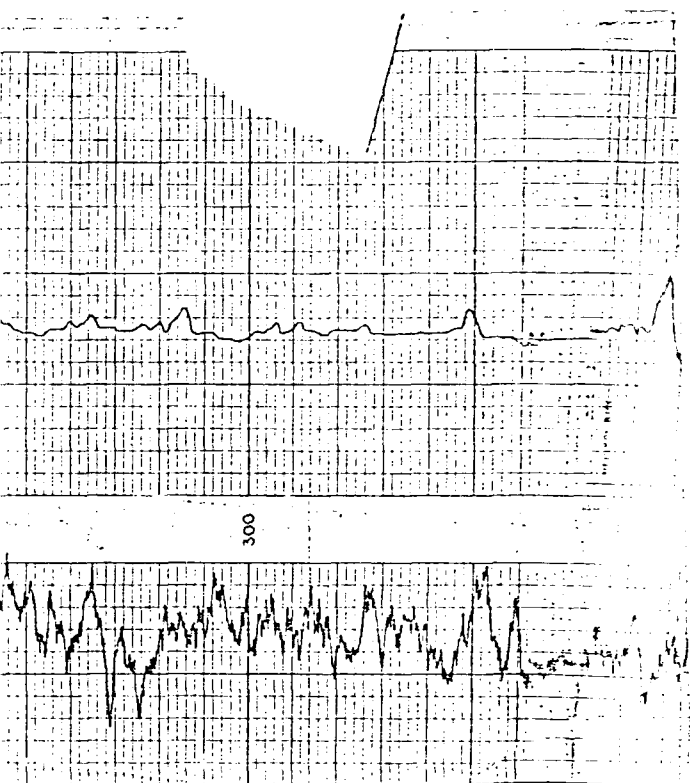
NO.	WT	DEPTH	TO	WTS	WPT.	DEPTH	TO
1	100	SURFACE	10"			10" OF	
2	100	350'	450'	0.15		SURFACE	350'

[illegible]

DEPTH	DEPTH	DEPTH
DEPTH	DEPTH	DEPTH







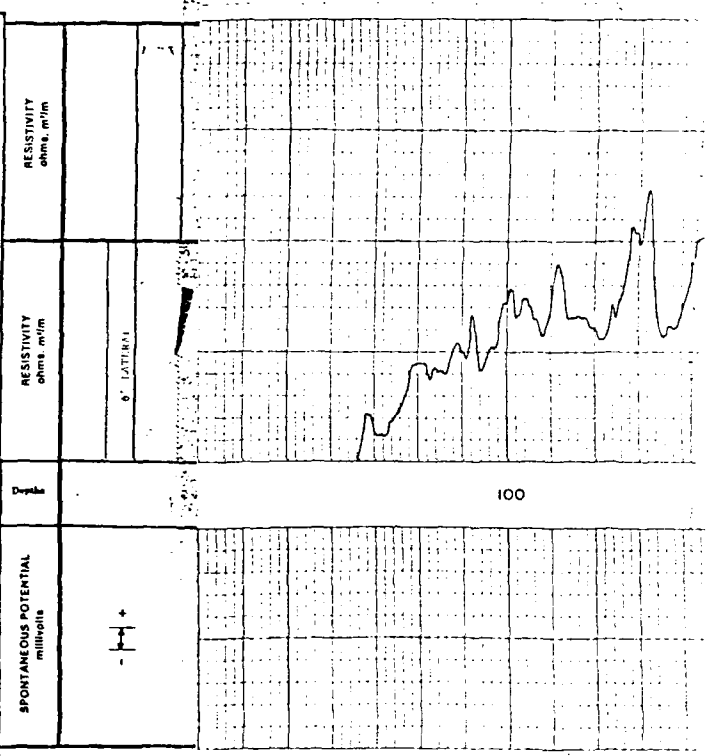
6" LATERAL

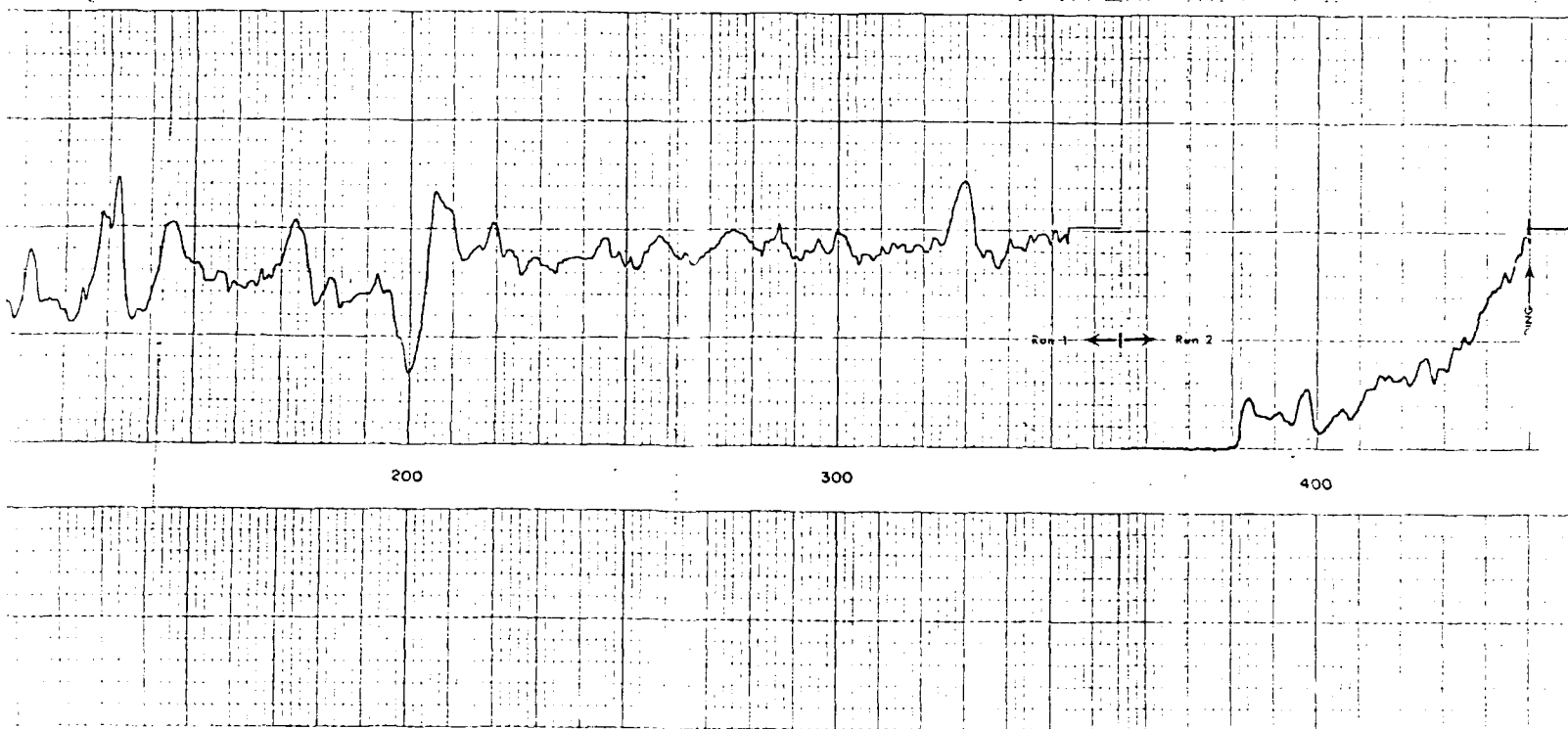
welenco

WELL ENGINEERING SURVEYS
ELECTRIC LOG

COMPANY: KEYLIN DRILLING	
WELL: 106	
FIELD: LIKE AIR FORCE BASE	
STATE: ARIZONA COUNTY: MARICOPA	
LOCATION: LUKE A.F.B.	
OTHER SERVICES: GAMMA RAY, CALIPER, ELECTRIC LOG	
SEC: TWP: RGE:	
Termination Datum: C.L. Elev: K.B.	
Log Measured From: C.L. Pl. Above Perm. Datum: D.P.	
Drilling Measured From: C.L. G.L.	
Date: 11-6-86	11-5-86
Run No. 107	720
Depth-Driller 375'	653'
Depth-Logger 356'	653'
Blk. Log Inter. 375'	653'
Top Log Inter. 66'	181'
Casing-Driller 375' @ 20"	6 5/8 @ 375, 3'
Casing-Logger	
Bit Size	
Type Fluid in Hole	WATER/MUD
Drain Valve	
pH Fluid Loss	
Source of Sample	
R _h @ Mean Temp. 25' @ 27°F	2.8 @ 27°F
R _h @ Mean Temp. 25' @ 27°F	2.8 @ 27°F
R _h @ Mean Temp. 25' @ 27°F	2.8 @ 27°F
Source: R _h	
R _h @ RHT	
Time Since Core	
Heat Run Temp.	
Core Location	
Corroded By	
Witnessed By	

REMARKS	
Changes in Mud Type or Additional Samples	
Drill Sample No.	
Depth-Driller	
Type Fluid in Hole	
Drain Valve	
pH Fluid Loss	
Source of Sample	
R _h @ Mean Temp.	
R _h @ Mean Temp.	
R _h @ Mean Temp.	
Source: R _h	
R _h @ RHT	
Time Since Core	
Heat Run Temp.	
Core Location	
Corroded By	
Witnessed By	







WELL LOGGING SURVEYS

ELECTRIC LOG

FILING NO.	COMPANY	WEYLIK DRILLING		
	WELL	196		
	FIELD	LUKE AIR FORCE BASE		
	STATE	ARIZONA	COUNTY	MARICOPA
	LOCATION	LUKE A.F.B.		
	SEC.	TWP.	RGE.	

OTHER SERVICES
GAMMA RAY
CALIPER
6' LATERAL

Permanent Datum	G.L.	Elev.	Elev. K.B.
Log Measured From	G.L.	PL. Above Perm. Datum	D.F.
Drilling Measured From	G.L.		G.L.

Date	11-3-86	11-5-86			
Run No.	088	720			
Depth-Driller	370'	453'			
Depth-Logger	351'	453'			
Run Log Inter.	370'	452'			
Top Log Inter.	0'	375'			
Casing-Driller	1" 20'	6 5/8" 375'			
Casing-Logger					
Bit Size					
Type Fluid in Hole	WATER	MUD			
Dens. Visc.					
pH Fluid Loss					
Source of Sample	PIT	PIT			
Run @ Meas. Temp.	25 @ 62°F	7.8 @ 57°F			
Run @ Meas. Temp.	25 @ 62°F	7.9 @ 62°F			
Run @ Meas. Temp.					
Run @ Meas. Temp.					
Run @ BLT					
Time Since Circ.	11 AS.	2 HRS.			
Max. Rec. Test					
Equip. Location	CH TEMPE	CH TEMPE			
Recorded By	D.L. CRAIG	D.L. CRAIG			
Witnessed By	MR. JAKATY/DR. HOATENG				

REMARKS

Changes in Mud Type or Additional Samples

Scale Changes

Scale Up Hole

Scale Down Hole

Type Log

Depth

Tool Type

Run No.

Tool Fraction

Other

Equipment Data

Pad Type

Tool Fraction

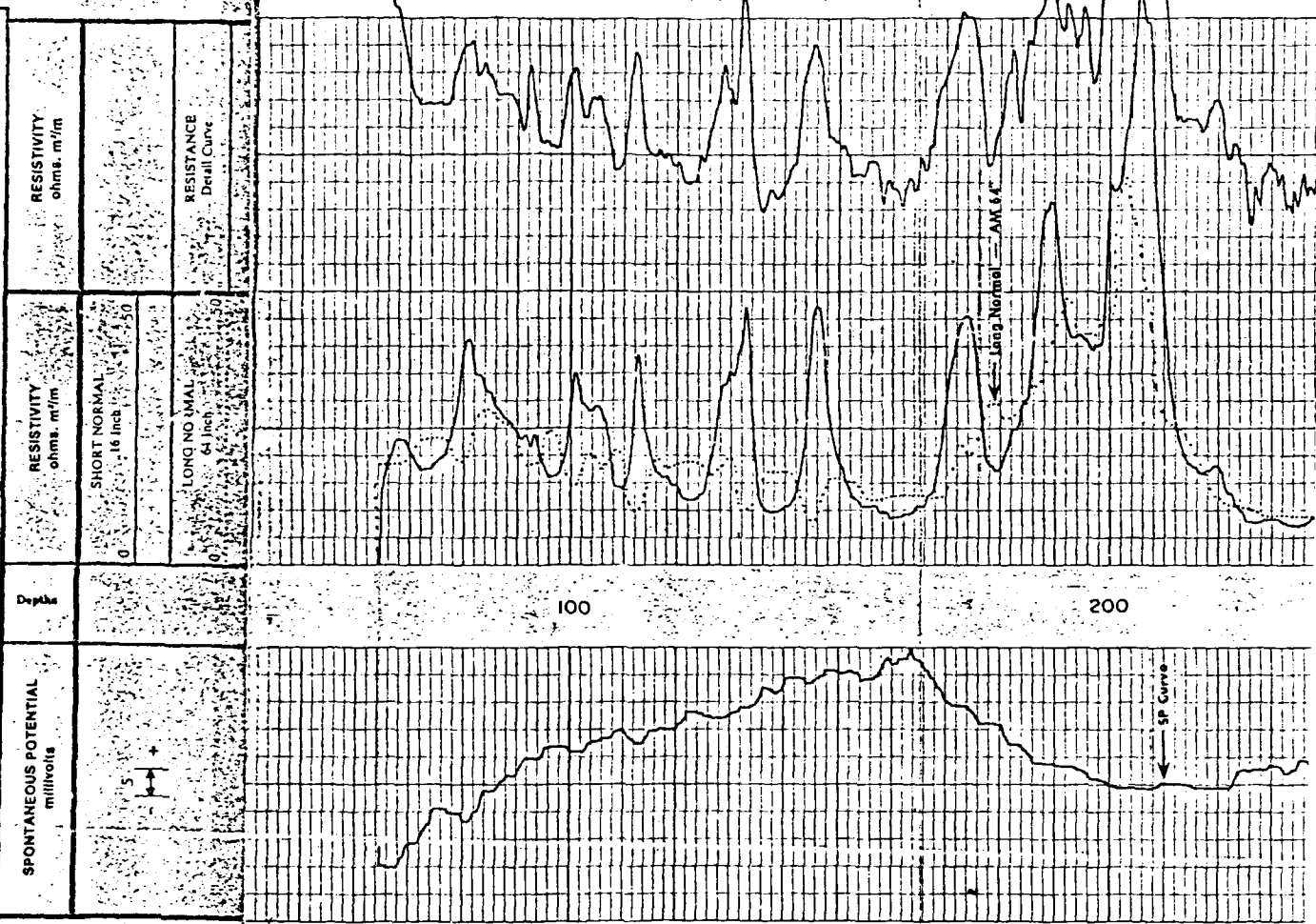
Other

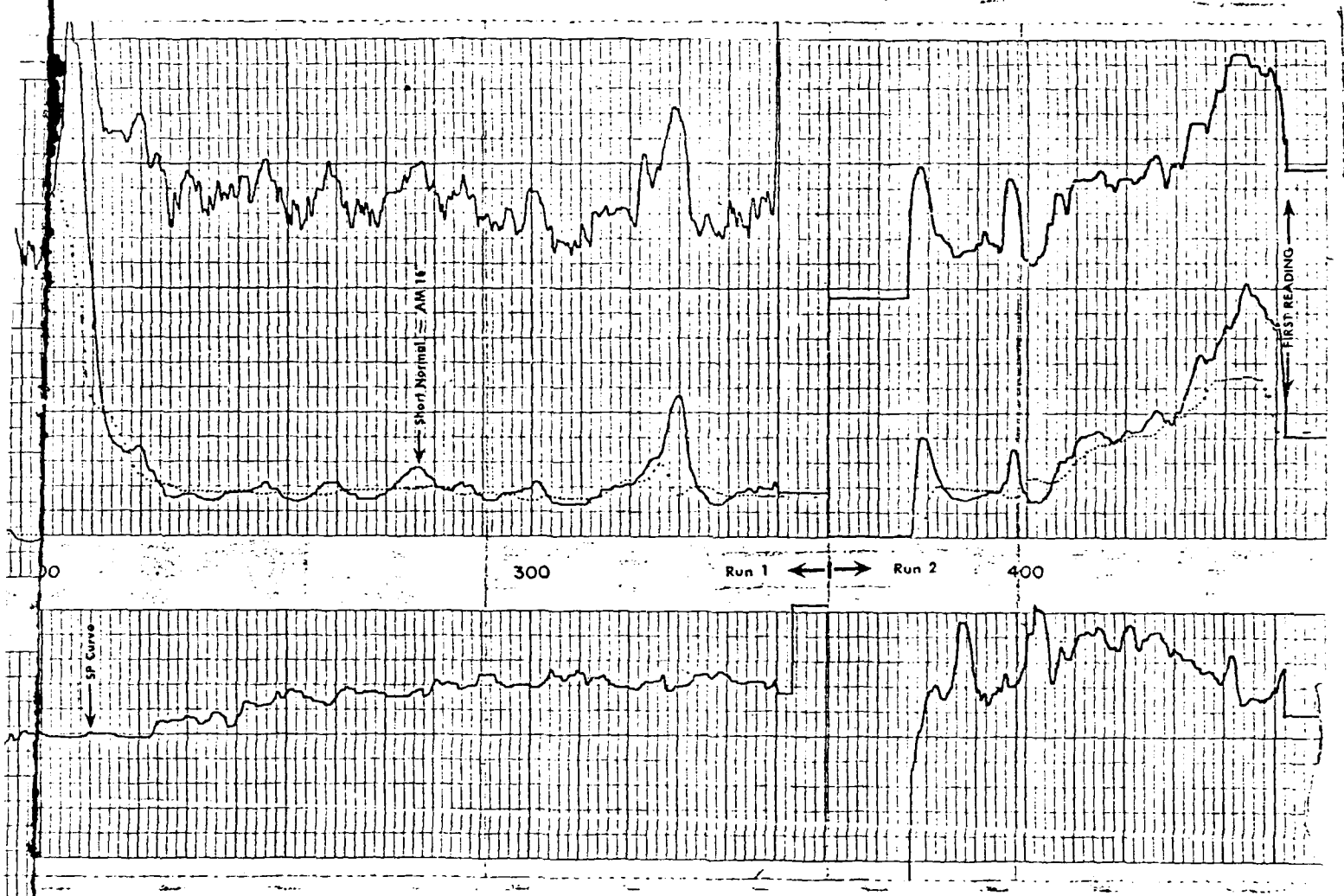
Run 1: WATER WAS DUMPED INTO THE WELL AFTER THE HOLE WAS DRILLED WITH FOAM. THIS OF WATER WAS 2ND RUN.

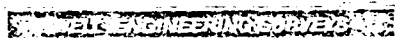
Run 2: DRILLING FLUID TBS 600 PPM.

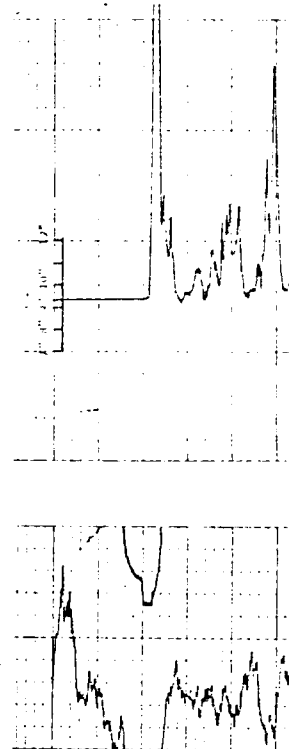
SHORT NORMAL.

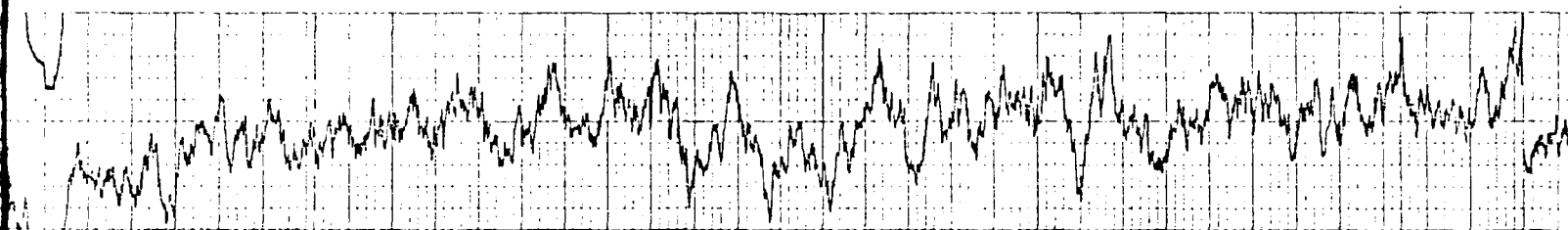
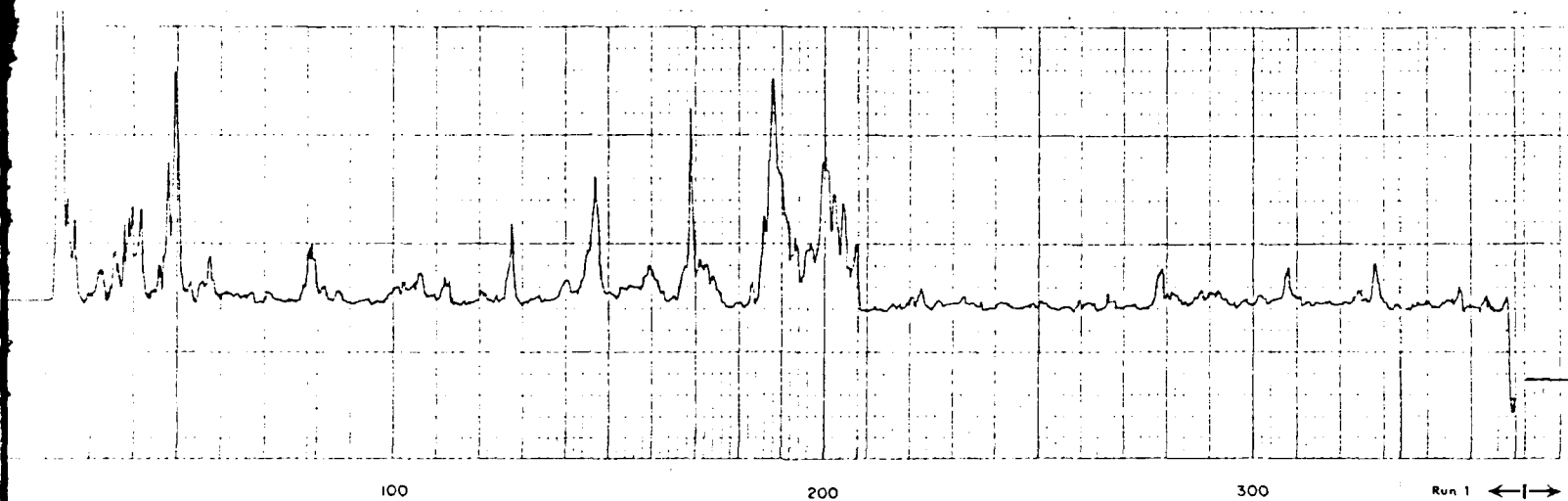
SOURCE, R_{sc} (ft)		NO. OF RECORDS		NO. OF RECORDS	
R_{sc} @ BUT	R_{sc} @ BUT	R_{sc} @ BUT	R_{sc} @ BUT	R_{sc} @ BUT	R_{sc} @ BUT
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
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68	68	68	68	68	68
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70	70	70	70	70	70
71	71	71	71	71	71
72	72	72	72	72	72

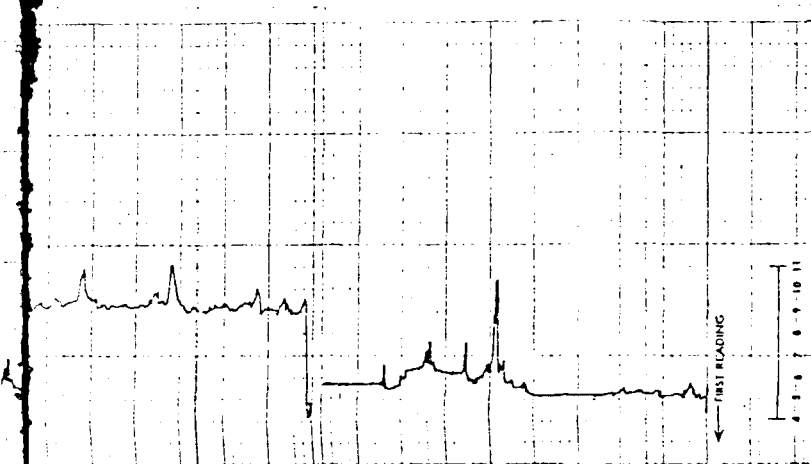












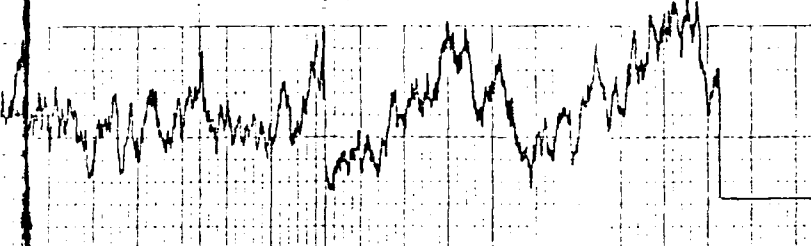
300

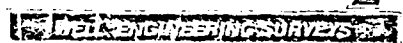
Run 1



Run 2

400





COMPANY NAME: TEXACO OIL COMPANY

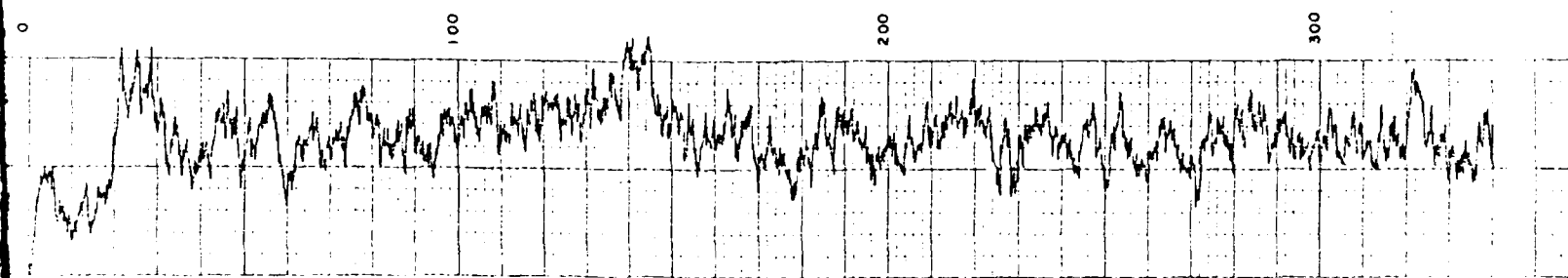
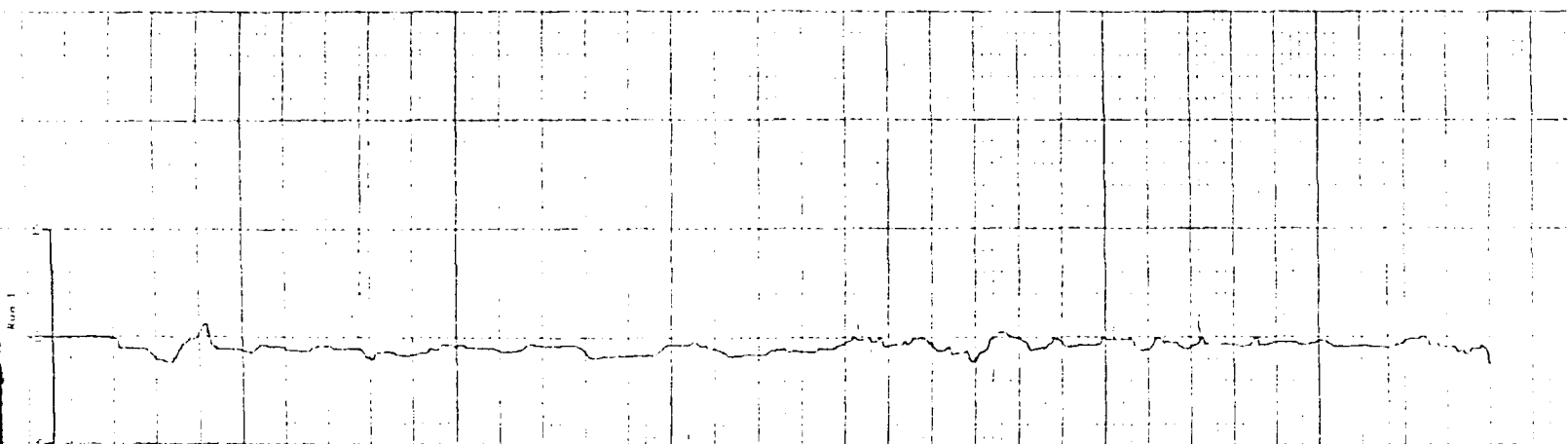
LABOR PAGES	USE A, F, P.	OTHER SERVICES
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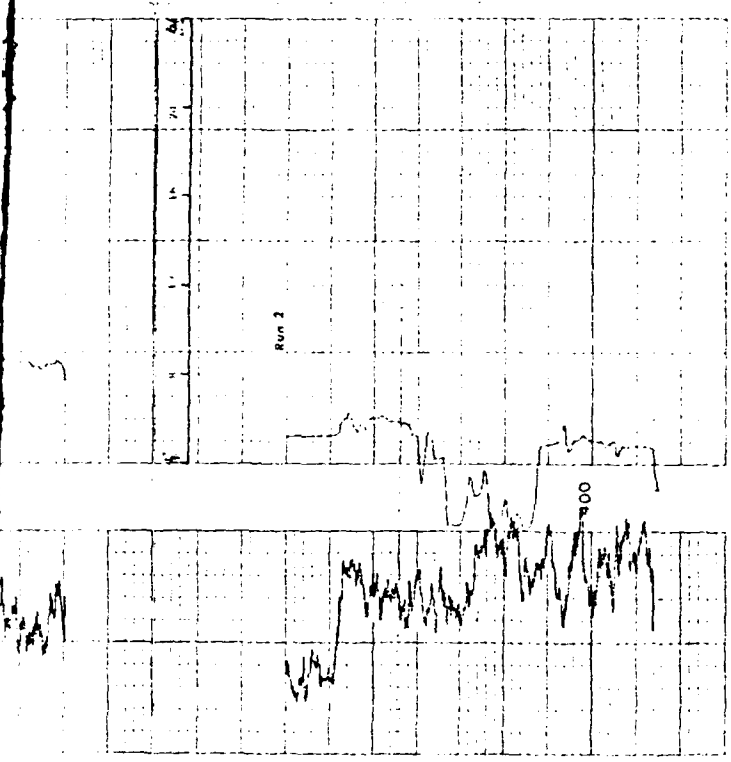
DATE	11-24-86	11-24-86	
DATE INQ.	ONE	TWO	
NAME	ALB. GILBERT	AL. GILBERT	

RUN		HOLE-HOLE RECORD		Casing RECORD			
NO.	DT	FROM	TO	MISS	WT.	FROM	TO

[illegible]

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26





welenco

WELL ENGINEERING SURVEYS ELECTRIC LOG

FILING NO.	COMPANY	BEYLIK DRILLING	
	WELL	NO. 108	
	FIELD	LINE AFB	
	STATE	ARIZONA	COUNTY
LOCATION:		OTHER SERVICES: GAMMA CALIPER	
SEC	TWP	RGE	

Permanent Datum:	G.L.	Elev.	K.B.
Log Measured From:	G.L.	PL. Above Perm. Datum	D.P.
Drilling Measured From:	G.L.		G.L.

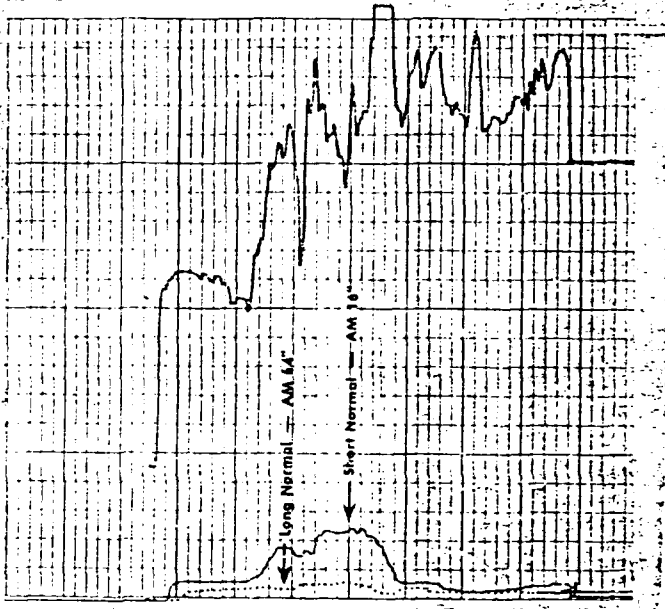
Date	12/5/86				
Run In	120'				
Depth-Driller	420'				
Depth-Logger	420'				
Shm. Log Inter.	419'				
Top Log Inter.	367'				
Casing-Driller	6 5/8" 363'				
Casing-Logger					
Bit Size	6"				
Type Fluid in Hole	WATER				
Dens. / Visc.	N/A				
pH / Fluid Loss	N/A				
Source of Sample	PIT				
R _h @ Meas. Temp.	2.25 @ 70°F				
R _{at} @ Meas. Temp.					
R _{so} @ Meas. Temp.					
Source R _{at} R _{so}					
R _h @ BHT					
Time Since Circ.	1 hr.				
Max. Rec. Temp.	N/A				
Equip. / Location	1 TEME				
Recorded By	CORRELL				
Witnessed By					

This Heading and Log Conform To API RP 31 & Field Note

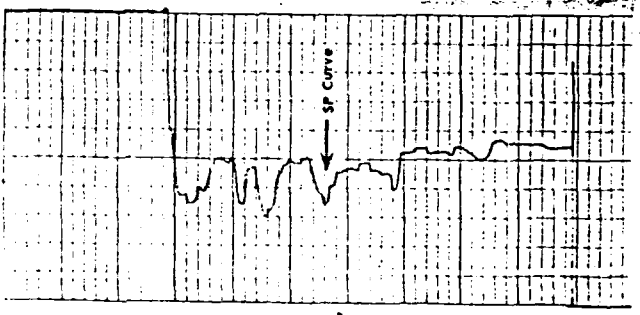
REMARKS: NOTE: UNABLE TO RUN D-CAL E-LOG DUE TO EXISTING ELECTRICAL NOISE FROM POWER LINES. (RUN 1)

Changes in Mud Type or Additional Samples	Data Sample No.	Depth	Scale Changes		Tool Type	Tool Position	Other
			Scale Up Hole	Scale Down Hole			
Drill-Driller							
Type Fluid in Hole							
Dens. / Visc.							
pH / Fluid Loss							
Source of Sample							
R _h @ Meas. Temp.							
R _{at} @ Meas. Temp.							
R _{so} @ Meas. Temp.							
Source R _{at} R _{so}							
R _h @ BHT							
R _{at} @ BHT							
R _{so} @ BHT							

SPONTANEOUS POTENTIAL millivolts	Depth	RESISTIVITY ohms. m/m		RESISTANCE Detail Curve
		SHORT NORMAL 16 inch	LONG NORMAL 64 inch	
	0			
	100			



400



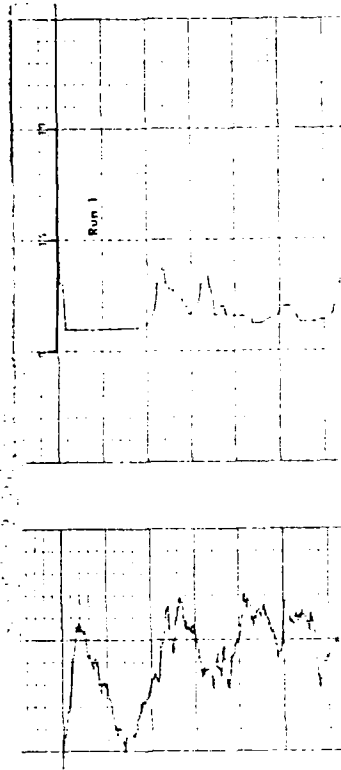


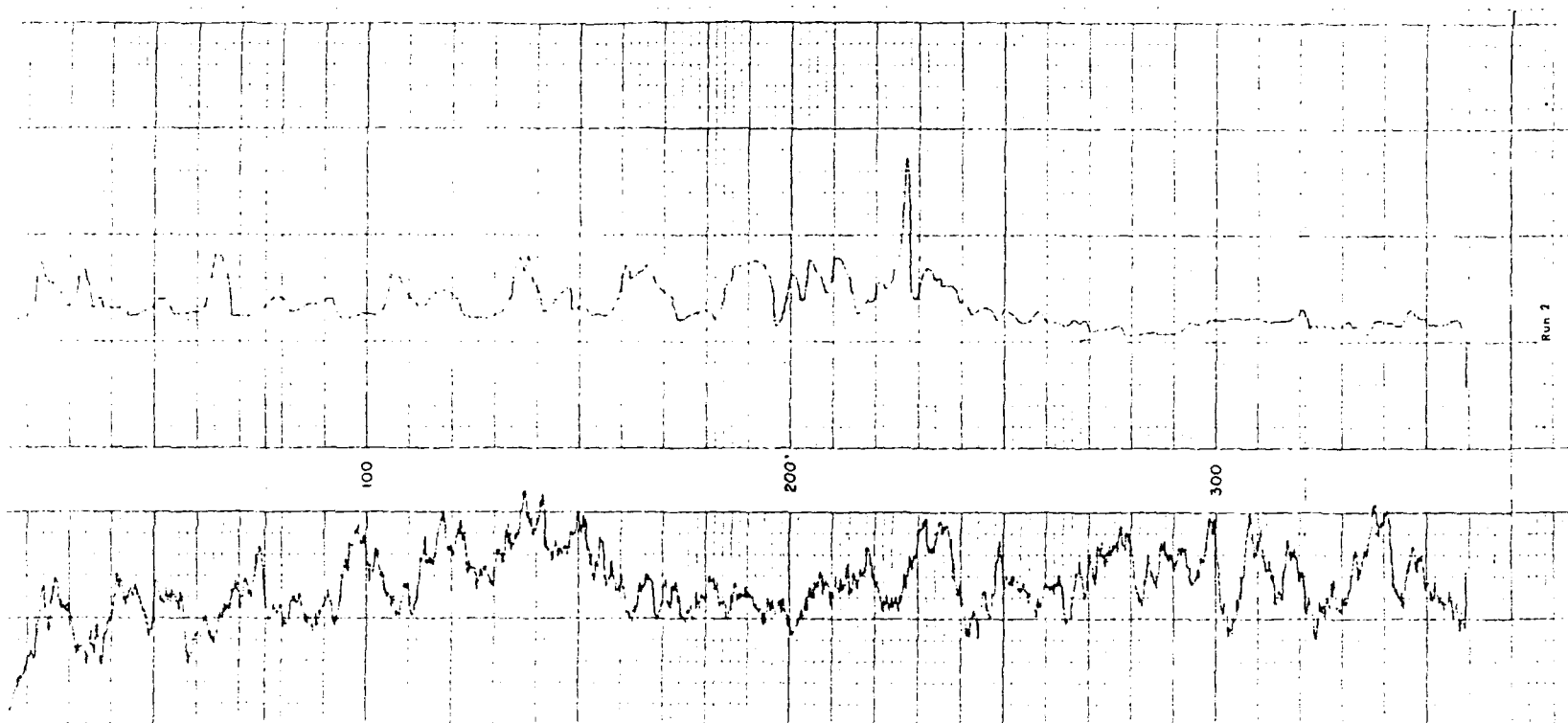
Gamma-Ray Caliper

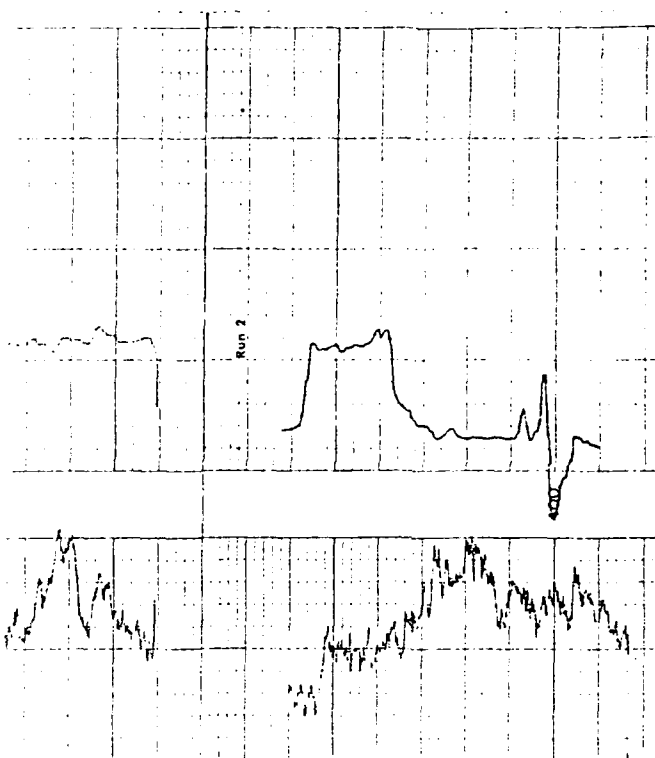
COMPANY _____ WELL NO. 10R _____ FILL _____ STATE ARIZONA COUNTY MARICOPA LOCATION _____ DATE _____	RESERVOIR FILLING NO. 10R LINE AFB ARIZONA COUNTY MARICOPA LOCATION _____ DATE _____				OTHER SERVICES 16-64 E-LOG	
	PRELIMINARY DATA C.L. _____ SURV. _____ LINE MEASURED FROM C.L. _____ FT ABOVE POINT SURV. _____ COLLAR MEASURED FROM C.L. _____ SURV. _____ S.L. _____				SURV. DATA SURV. NO. _____ S.L. _____	
	DATE		12/24/84		12/4/86	
	TYPE WELL		ONE		TWO	
	TYPE LOG		CAMELO CALIPER		CAMELO CALIPER	
DEPTH LOGGED		353'		420'		
DEPTH LOGGED		340' 363'		418' 411'		
DEPTH LOGGED INTERVAL		353' 353'		417' 410'		
TOP LOGGED INTERVAL		0' 0'		340' 340'		
TYPE PLUG IN HOLE		WATER		WATER		
HOLE LOG TYPE, END, P.		N/P		N/P		
CORRECTION BY		CONNELL		CURRELL		
APPROVED BY		MR. W. F. MEILAND		S. CARLTT		
PLAN NO. 1 DT 1/8"		ROSS-HOLE RECORD NO. 1 DT 1/8"		CASING RECORD NO. 1 DT 1/8"		
1 1/8" 20' 343'		1 1/8" 20' 343'		1 1/8" 20' 343'		
2 1/8" 20' 343'		2 1/8" 20' 343'		2 1/8" 20' 343'		

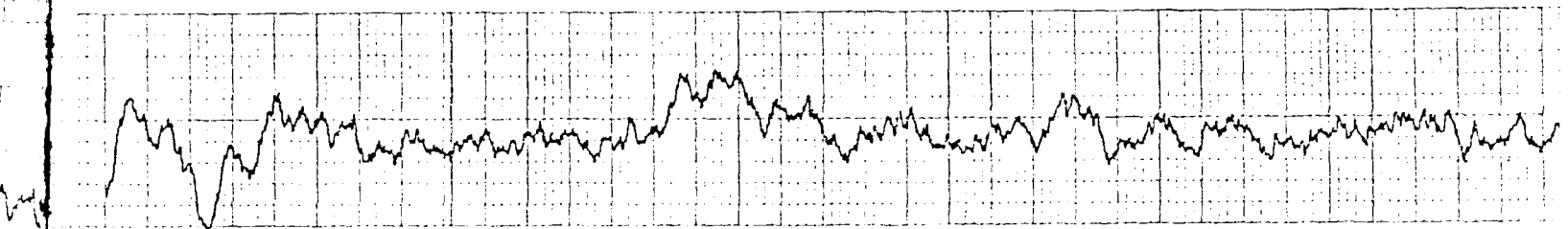
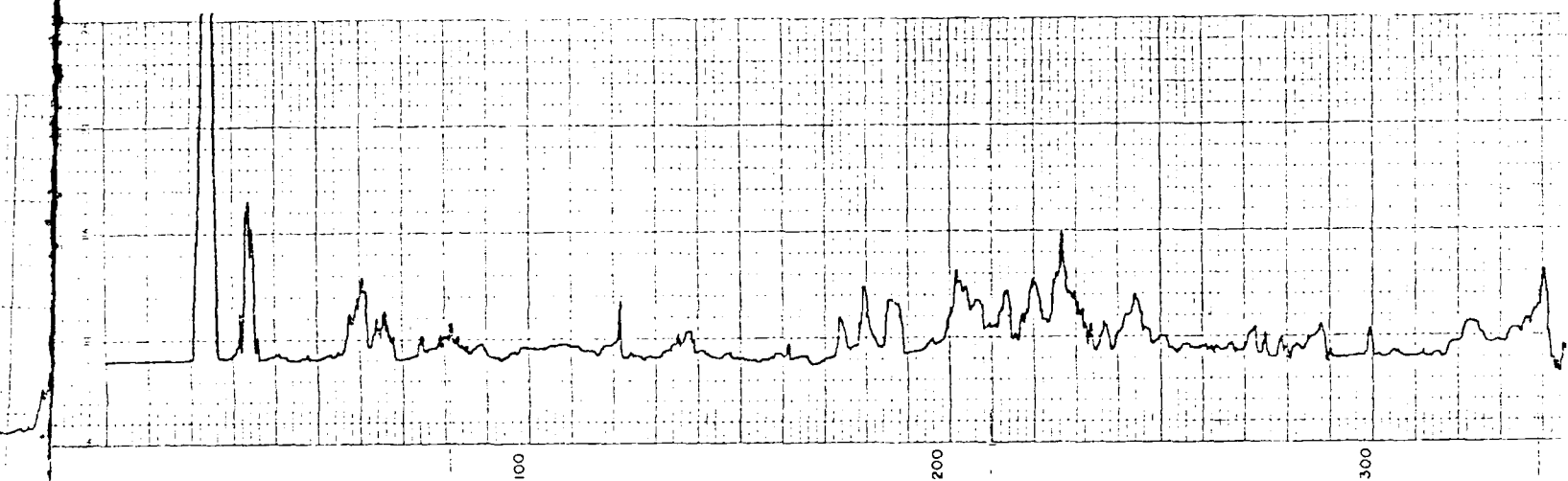
EQUIPMENT DATA									
Run No.	083	Gamma Ray	Run No.		Position				
Tool Model No.	GEN/300/174	Tool Model No.							
Diameter	1 1/16"	Diameter							
Type	CR	Directional Control No.							
Length	18'	Length							
Direction Is N Source		Source Model No.							
		Source SN No.							
		Setting							
		Type							
		Strength							
Head Tool No.									
Incremental Track No.									
Tool Serial No.									
<h3>LOGGING DATA</h3>									
Gamma Ray			Neutron						
Run No.		Tool Model No.	Run No.		Tool Model No.				
Tool Model No.		Tool Model No.	Tool Model No.		Tool Model No.				
Diameter		Diameter	Diameter		Diameter				
Type		Type	Type		Type				
Length		Length	Length		Length				
Direction Is N Source		Source Model No.	Source Model No.		Source Model No.				
		Source SN No.	Source SN No.		Source SN No.				
		Setting	Setting		Setting				
		Type	Type		Type				
		Strength	Strength		Strength				
<h3>LOGGING DATA</h3>									
Gamma Ray			Neutron						
Run No.		Tool Model No.	Run No.		Tool Model No.				
Tool Model No.		Tool Model No.	Tool Model No.		Tool Model No.				
Diameter		Diameter	Diameter		Diameter				
Type		Type	Type		Type				
Length		Length	Length		Length				
Direction Is N Source		Source Model No.	Source Model No.		Source Model No.				
		Source SN No.	Source SN No.		Source SN No.				
		Setting	Setting		Setting				
		Type	Type		Type				
		Strength	Strength		Strength				
<h3>LOGGING DATA</h3>									
Gamma Ray			Neutron						
Run No.		Tool Model No.	Run No.		Tool Model No.				
Tool Model No.		Tool Model No.	Tool Model No.		Tool Model No.				
Diameter		Diameter	Diameter		Diameter				
Type		Type	Type		Type				
Length		Length	Length		Length				
Direction Is N Source		Source Model No.	Source Model No.		Source Model No.				
		Source SN No.	Source SN No.		Source SN No.				
		Setting	Setting		Setting				
		Type	Type		Type				
		Strength	Strength		Strength				
<h3>LOGGING DATA</h3>									
Gamma Ray			Neutron						
Run No.		Tool Model No.	Run No.		Tool Model No.				
Tool Model No.		Tool Model No.	Tool Model No.		Tool Model No.				
Diameter		Diameter	Diameter		Diameter				
Type		Type	Type		Type				
Length		Length	Length		Length				
Direction Is N Source		Source Model No.	Source Model No.		Source Model No.				
		Source SN No.	Source SN No.		Source SN No.				
		Setting	Setting		Setting				
		Type	Type		Type				
		Strength	Strength		Strength				
<h3>LOGGING DATA</h3>									
Gamma Ray			Neutron						
Run No.		Tool Model No.	Run No.		Tool Model No.				
Tool Model No.		Tool Model No.	Tool Model No.		Tool Model No.				
Diameter		Diameter	Diameter		Diameter				
Type		Type	Type		Type				
Length		Length	Length		Length				
Direction Is N Source		Source Model No.	Source Model No.		Source Model No.				
		Source SN No.	Source SN No.		Source SN No.				
		Setting	Setting		Setting				
		Type	Type		Type				
		Strength	Strength		Strength				
<h3>LOGGING DATA</h3>									
Gamma Ray			Neutron						
Run No.		Tool Model No.	Run No.		Tool Model No.				
Tool Model No.		Tool Model No.	Tool Model No.		Tool Model No.				
Diameter		Diameter	Diameter		Diameter				
Type		Type	Type		Type				
Length		Length	Length		Length				
Direction Is N Source		Source Model No.	Source Model No.		Source Model No.				
		Source SN No.	Source SN No.		Source SN No.				
		Setting	Setting		Setting				
		Type	Type		Type				
		Strength	Strength		Strength				
<h3>LOGGING DATA</h3>									
Gamma Ray			Neutron						
Run No.		Tool Model No.	Run No.		Tool Model No.				
Tool Model No.		Tool Model No.	Tool Model No.		Tool Model No.				
Diameter		Diameter	Diameter		Diameter				
Type		Type	Type		Type				
Length		Length	Length		Length				
Direction Is N Source		Source Model No.	Source Model No.		Source Model No.				
		Source							

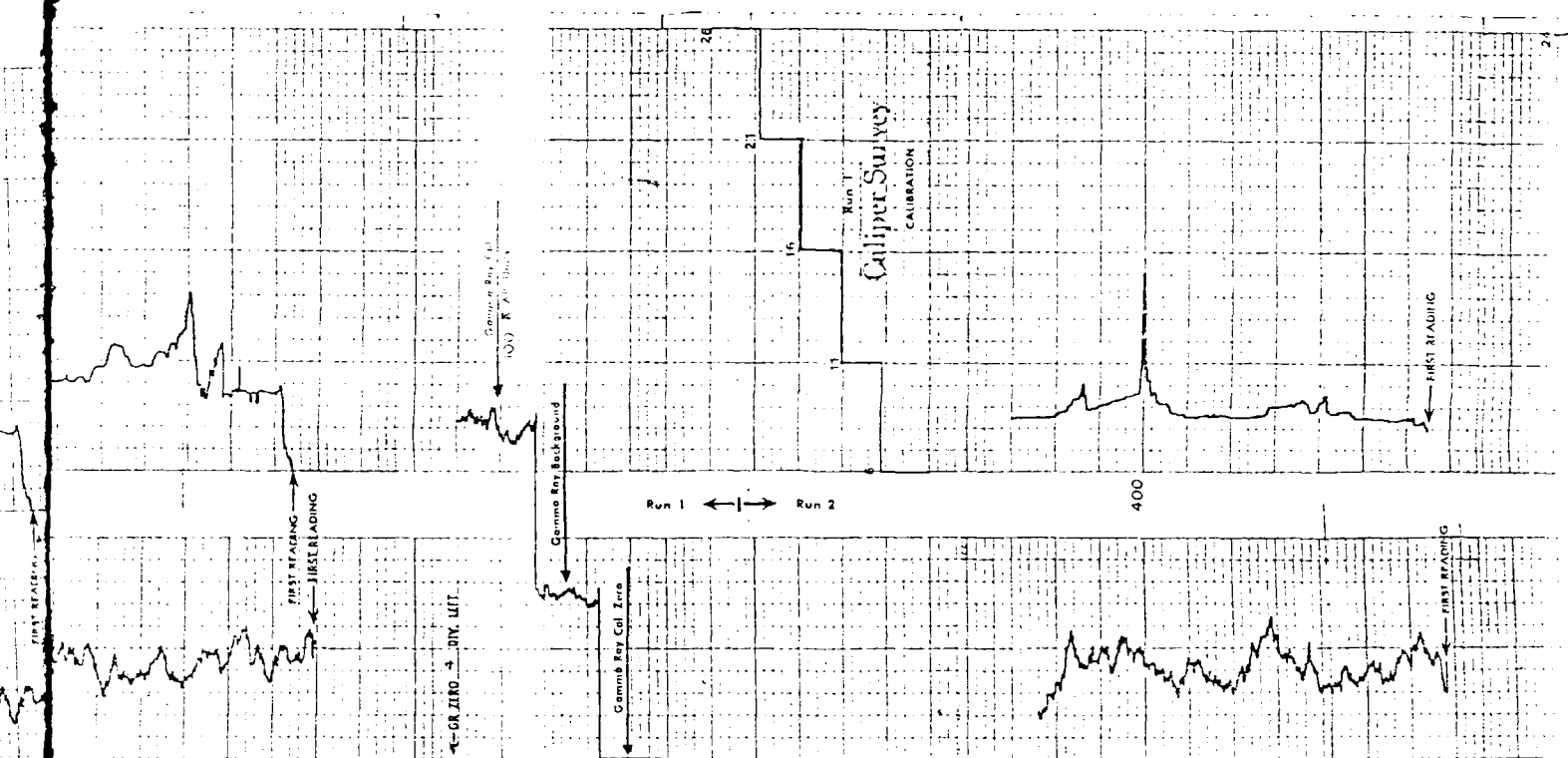
CARBON API UNITS	DEPTH	CALIBER IN INCHES
		200











WELL ENGINEERING SURVEYS **ELECTRIC LOG**

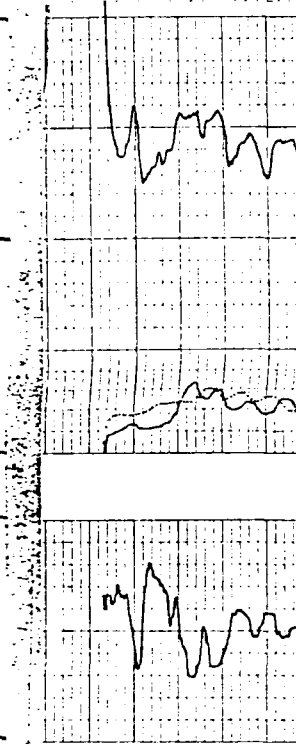
FORM NO. 10	
COMPANY <u>NEWARK DRILLING, INC.</u>	
WELL # <u>104</u>	
FIELD <u>LIVE A P.R.</u>	
STATE <u>ARIZONA</u> COUNTY <u>PARICHA</u>	
LOCATION:	OTHER SERVICES b) LATERAL GAMMA RAY CALIPER
SFC <u> </u> TWP <u> </u> RGE <u> </u>	
Permanent Datum: <u>C.L.</u> Elev. <u> </u>	Elev. <u>K.B.</u>
Log Measured From: <u>C.L.</u> PL Above Perm. Datum	D.P. <u> </u>
Drilling Measured From: <u>C.L.</u>	G.L. <u> </u>

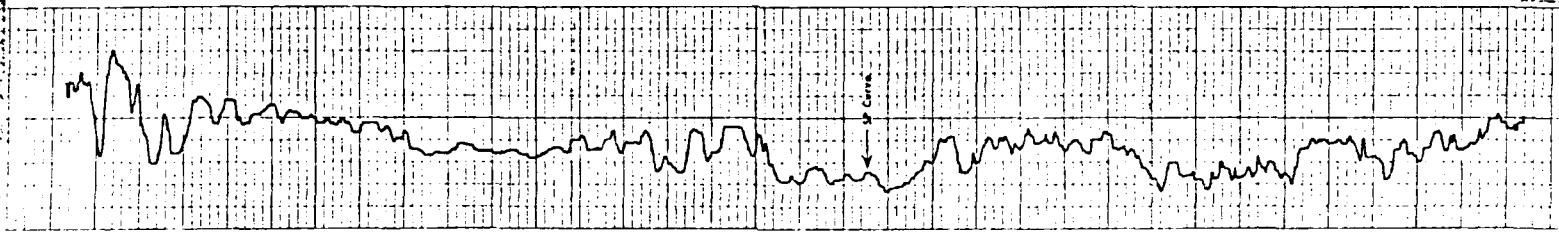
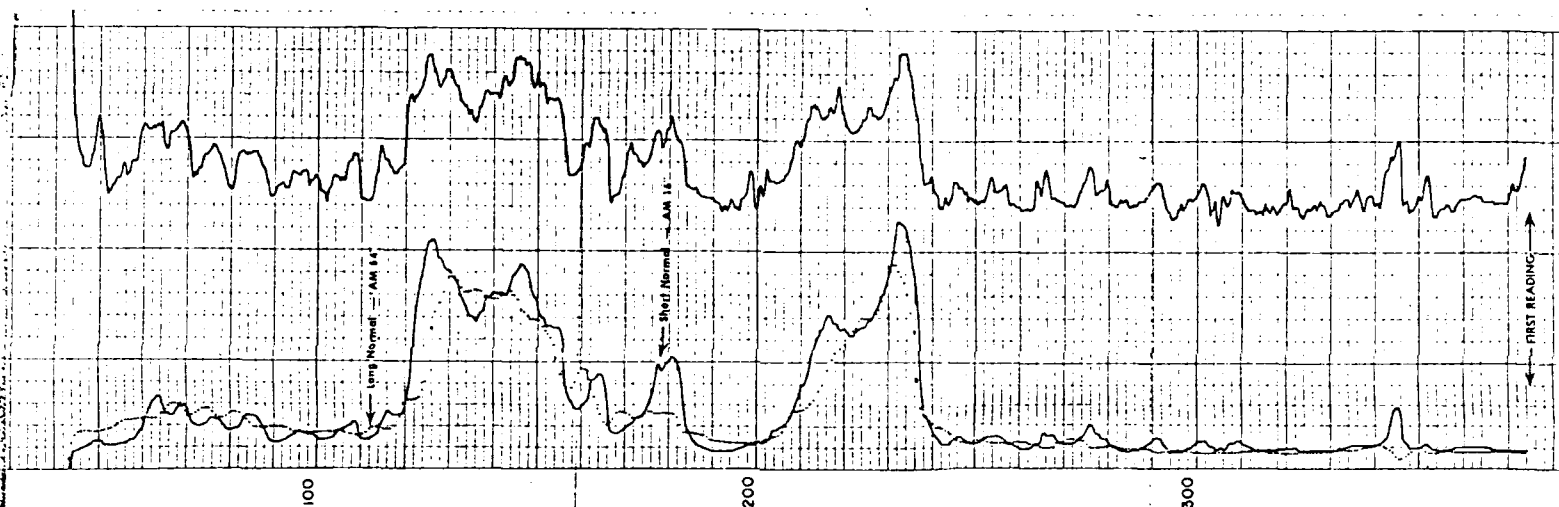
Date	11-12-86	11-14-86			
Run No.	ONE	Two			
Depth—Driller	385'	470'			
Depth—Logger	376'	470'			
Run Log Interval	325'	420'			
Core Log Interval	44'	383'			
Casing—Driller	10 3/8" 20'	6 1/2" 380'			
Casing—Logger	--	--			
Bit Size	9 7/8"	8"			
Type Fluid in Hole	WATER	WATER			
Dens. Visc.	N/A	N/A			
pH Fluid Loss	N/A ml	N/A ml			
Source of Sample	P17	P17			
R _h @ Mean Temp.	14.0 @ 70°F	3.1 @ 78°F			
R _h @ Mean Temp.	100.0 @ 79°F	3.1 @ 78°F			
R _h @ Mean Temp.	N/A	N/A			
Source R _h R _h	N/A	N/A			
R _h @ RHT	N/A	N/A			
Time Since Core	1 day	1.2 day			
Max. Rec. Temp.	N/A	N/A			
Expos. Location	C.V. 1 P.O.	C.V. 1 P.O.			
Recorded By	ROBERT	ROBERT			
Witnessed By					

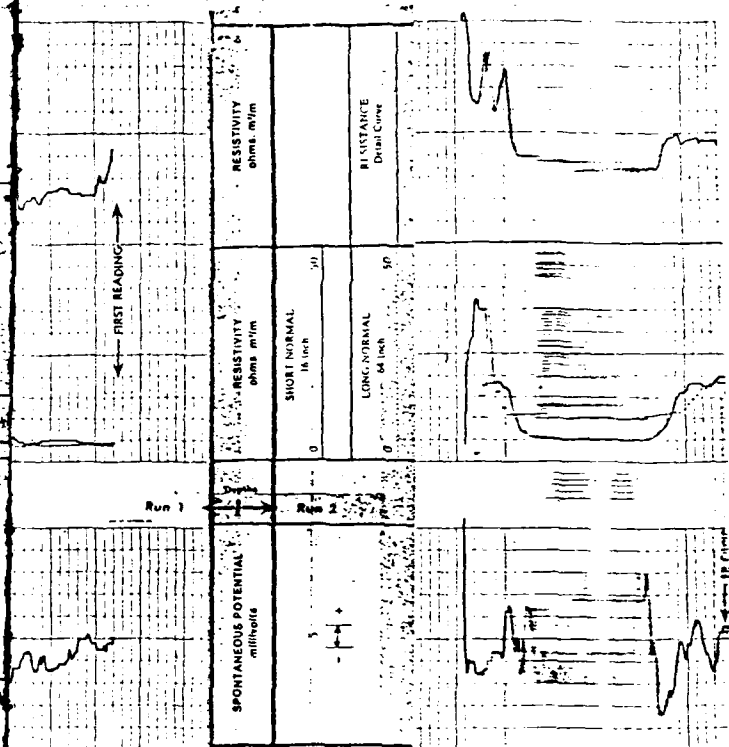
REMARKS

Changes in Rod Type or Additional Samples

Date Sample No.	Depth—Driller	Type Fluid in Hole	Dens. Visc.	pH Fluid Loss	Source of Sample	R _h @ Mean Temp.	R _h @ Mean Temp.	R _h @ Mean Temp.	Source R _h R _h	R _h @ RHT	Time Since Core	Max. Rec. Temp.	Expos. Location	Recorded By	Witnessed By
11-12-86 P17	385'	WATER	N/A	N/A	P17	14.0 @ 70°F	3.1 @ 78°F	100.0 @ 79°F	N/A	N/A	1 day	N/A	C.V. 1 P.O.	ROBERT	
11-14-86 P17	470'	WATER	N/A	N/A	P17	3.1 @ 78°F	3.1 @ 78°F	3.1 @ 78°F	N/A	N/A	1.2 day	N/A	C.V. 1 P.O.	ROBERT	

DEPTH	RESISTIVITY ohms m/ft	RESISTIVITY ohms m/ft
	SHORT NORMAL 16 in. 100	LONG NORMAL 64 in. 100
SPONTANEOUS POTENTIAL millivolts		







ENGINEERING SURVEYS ELECTRIC LOG

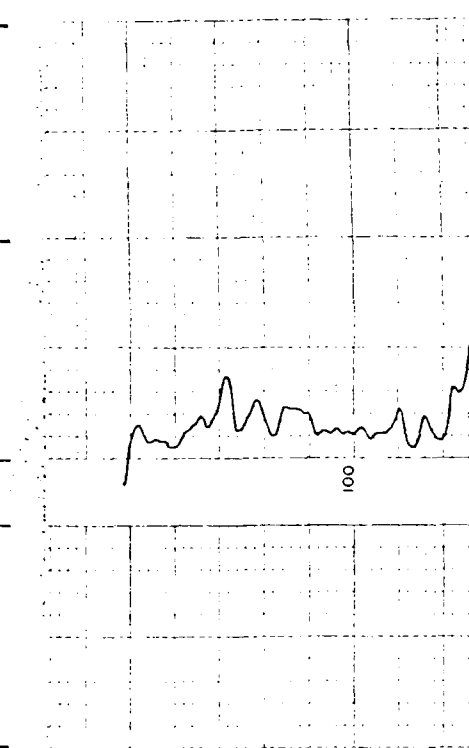
FILING NO. _____
 COMPANY _____
 WILL _____
 FIELD _____
 STATE _____ COUNTY _____
 LOCATION _____
 SFC _____ PAGE _____
 OTHER SERVICES
 10-66 L-240
 CAMINO RAY
 CRUISE

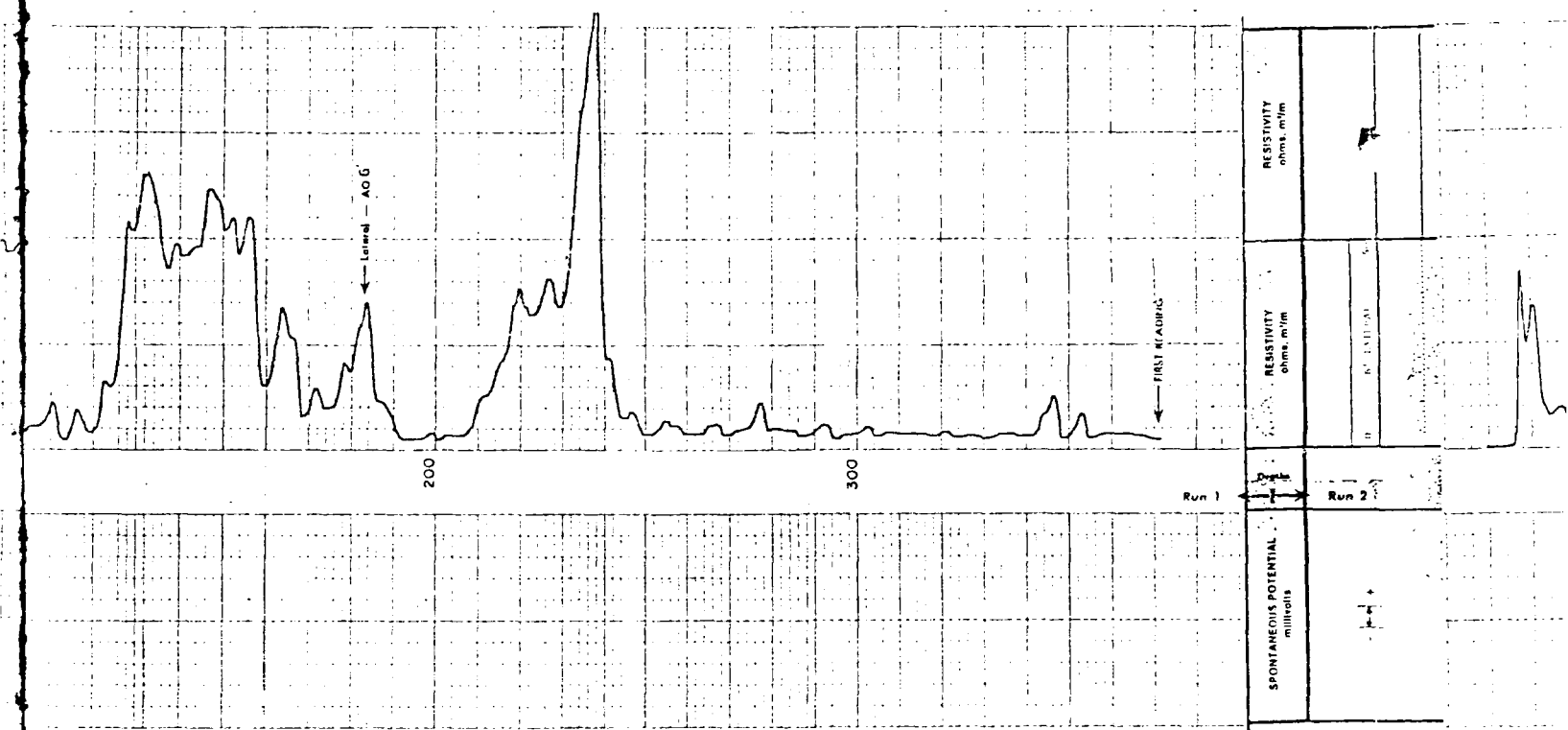
Permanent Datum	_____	View	_____	Elev: A. B. _____
Log Measured From	_____	Pl. Above Perm. Datum	_____	D.F. _____
Drilling Measured From	_____		_____	C.L. _____

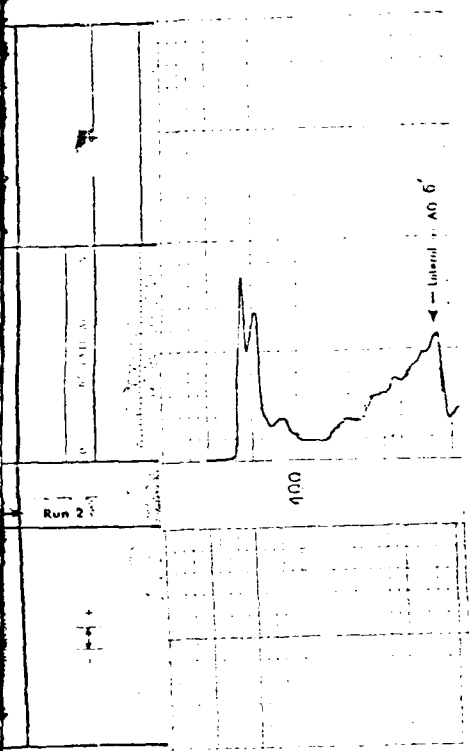
Date	12-1-54	12-2-54	12-3-54	12-4-54	12-5-54	12-6-54	12-7-54	12-8-54	12-9-54	12-10-54	12-11-54	12-12-54	1-1-55	1-2-55	1-3-55	1-4-55	1-5-55	1-6-55	1-7-55	1-8-55	1-9-55	1-10-55	1-11-55	1-12-55	2-1-56	2-2-56	2-3-56	2-4-56	2-5-56	2-6-56	2-7-56	2-8-56	2-9-56	2-10-56	2-11-56	2-12-56	3-1-57	3-2-57	3-3-57	3-4-57	3-5-57	3-6-57	3-7-57	3-8-57	3-9-57	3-10-57	3-11-57	3-12-57	4-1-58	4-2-58	4-3-58	4-4-58	4-5-58	4-6-58	4-7-58	4-8-58	4-9-58	4-10-58	4-11-58	4-12-58	5-1-59	5-2-59	5-3-59	5-4-59	5-5-59	5-6-59	5-7-59	5-8-59	5-9-59	5-10-59	5-11-59	5-12-59	6-1-60	6-2-60	6-3-60	6-4-60	6-5-60	6-6-60	6-7-60	6-8-60	6-9-60	6-10-60	6-11-60	6-12-60	7-1-61	7-2-61	7-3-61	7-4-61	7-5-61	7-6-61	7-7-61	7-8-61	7-9-61	7-10-61	7-11-61	7-12-61	8-1-62	8-2-62	8-3-62	8-4-62	8-5-62	8-6-62	8-7-62	8-8-62	8-9-62	8-10-62	8-11-62	8-12-62	9-1-63	9-2-63	9-3-63	9-4-63	9-5-63	9-6-63	9-7-63	9-8-63	9-9-63	9-10-63	9-11-63	9-12-63	10-1-64	10-2-64	10-3-64	10-4-64	10-5-64	10-6-64	10-7-64	10-8-64	10-9-64	10-10-64	10-11-64	10-12-64	11-1-65	11-2-65	11-3-65	11-4-65	11-5-65	11-6-65	11-7-65	11-8-65	11-9-65	11-10-65	11-11-65	11-12-65	12-1-66	12-2-66	12-3-66	12-4-66	12-5-66	12-6-66	12-7-66	12-8-66	12-9-66	12-10-66	12-11-66	12-12-66	1-1-67	1-2-67	1-3-67	1-4-67	1-5-67	1-6-67	1-7-67	1-8-67	1-9-67	1-10-67	1-11-67	1-12-67	2-1-68	2-2-68	2-3-68	2-4-68	2-5-68	2-6-68	2-7-68	2-8-68	2-9-68	2-10-68	2-11-68	2-12-68	3-1-69	3-2-69	3-3-69	3-4-69	3-5-69	3-6-69	3-7-69	3-8-69	3-9-69	3-10-69	3-11-69	3-12-69	4-1-70	4-2-70	4-3-70	4-4-70	4-5-70	4-6-70	4-7-70	4-8-70	4-9-70	4-10-70	4-11-70	4-12-70	5-1-71	5-2-71	5-3-71	5-4-71	5-5-71	5-6-71	5-7-71	5-8-71	5-9-71	5-10-71	5-11-71	5-12-71	6-1-72	6-2-72	6-3-72	6-4-72	6-5-72	6-6-72	6-7-72	6-8-72	6-9-72	6-10-72	6-11-72	6-12-72	7-1-73	7-2-73	7-3-73	7-4-73	7-5-73	7-6-73	7-7-73	7-8-73	7-9-73	7-10-73	7-11-73	7-12-73	8-1-74	8-2-74	8-3-74	8-4-74	8-5-74	8-6-74	8-7-74	8-8-74	8-9-74	8-10-74	8-11-74	8-12-74	9-1-75	9-2-75	9-3-75	9-4-75	9-5-75	9-6-75	9-7-75	9-8-75	9-9-75	9-10-75	9-11-75	9-12-75	10-1-76	10-2-76	10-3-76	10-4-76	10-5-76	10-6-76	10-7-76	10-8-76	10-9-76	10-10-76	10-11-76	10-12-76	11-1-77	11-2-77	11-3-77	11-4-77	11-5-77	11-6-77	11-7-77	11-8-77	11-9-77	11-10-77	11-11-77	11-12-77	12-1-78	12-2-78	12-3-78	12-4-78	12-5-78	12-6-78	12-7-78	12-8-78	12-9-78	12-10-78	12-11-78	12-12-78	1-1-79	1-2-79	1-3-79	1-4-79	1-5-79	1-6-79	1-7-79	1-8-79	1-9-79	1-10-79	1-11-79	1-12-79	2-1-80	2-2-80	2-3-80	2-4-80	2-5-80	2-6-80	2-7-80	2-8-80	2-9-80	2-10-80	2-11-80	2-12-80	3-1-81	3-2-81	3-3-81	3-4-81	3-5-81	3-6-81	3-7-81	3-8-81	3-9-81	3-10-81	3-11-81	3-12-81	4-1-82	4-2-82	4-3-82	4-4-82	4-5-82	4-6-82	4-7-82	4-8-82	4-9-82	4-10-82	4-11-82	4-12-82	5-1-83	5-2-83	5-3-83	5-4-83	5-5-83	5-6-83	5-7-83	5
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[illegible]

SPONTANEOUS POTENTIAL millivolts	Frequency	RESISTIVITY ohms m/m	RESISTIVITY ohms m/m
1.0	10	1.0	1.0
2.0	20	2.0	2.0
3.0	30	3.0	3.0
4.0	40	4.0	4.0
5.0	50	5.0	5.0
6.0	60	6.0	6.0
7.0	70	7.0	7.0
8.0	80	8.0	8.0
9.0	90	9.0	9.0
10.0	100	10.0	10.0









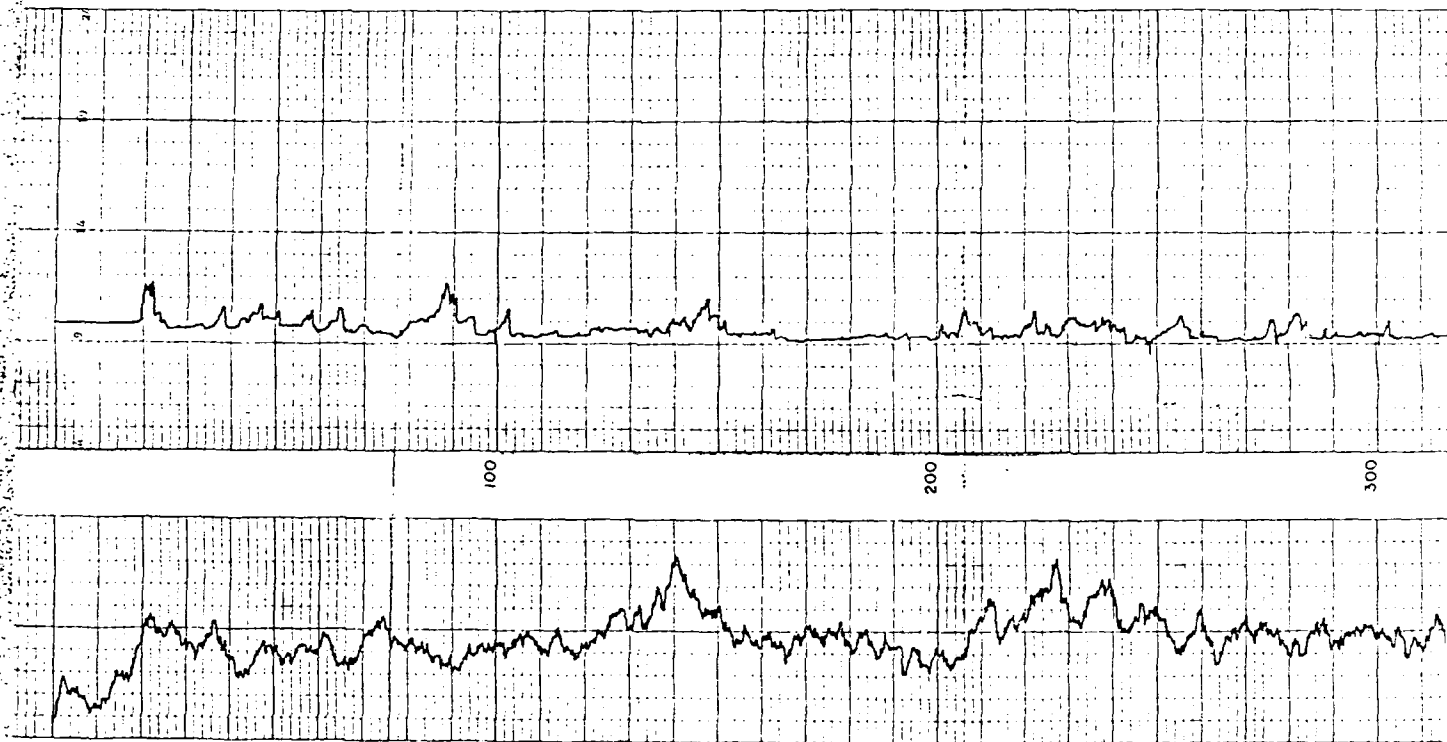
COMPANY MOYLYN DRILLING, INC.

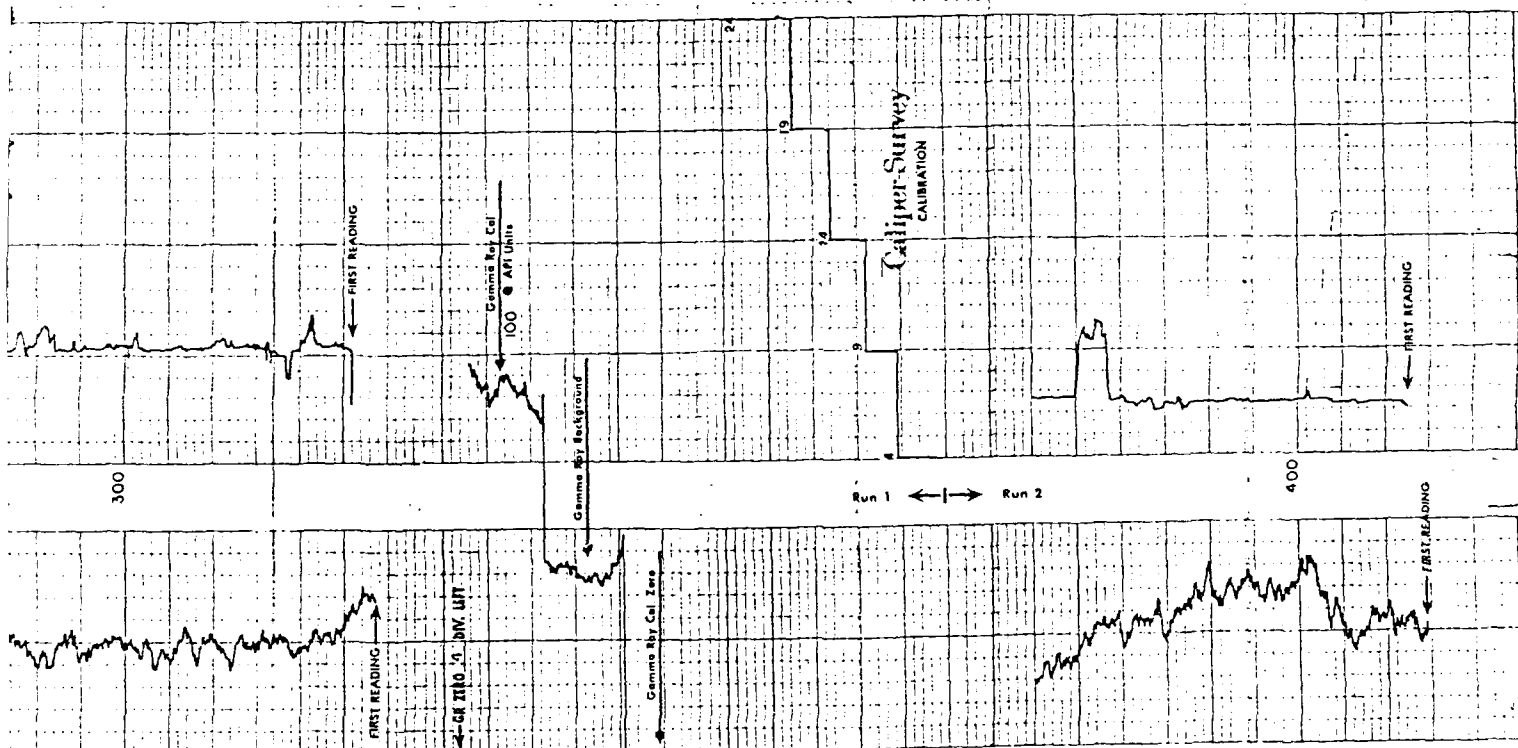
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End Run

GAMMA RAY		CALIFOR	
DEPTH		HOLE DIAM. IN INCHES	
GAMMA RAY		17 1/2	
ART GAMMA RAY UNITS		50	





WELL ENGINEERING SURVEYS

FILING NO.	COMPANY <u>REEDER DRILLING, INC.</u>	
	WELL <u># 110</u>	
	FIELD <u>LUKE A.F.B.</u>	
	STATE <u>ARIZONA</u>	COUNTY <u>NAHICOPA</u>
LOCATION	OTHER SERVICES <u>6' LATERAL</u> <u>GAMMA RAY</u> <u>CALIPER</u>	
SEC <u> </u>	TWP <u> </u>	RGE <u> </u>

Permanent Datum: G.L. Elev. Elev. K.B.
Log Measured From G.L. Ft. Above Perm. Datum D.F.
Drilling Measured From G.L. G.L.

[illegible]

This Heading and Log Conform To API RP 31

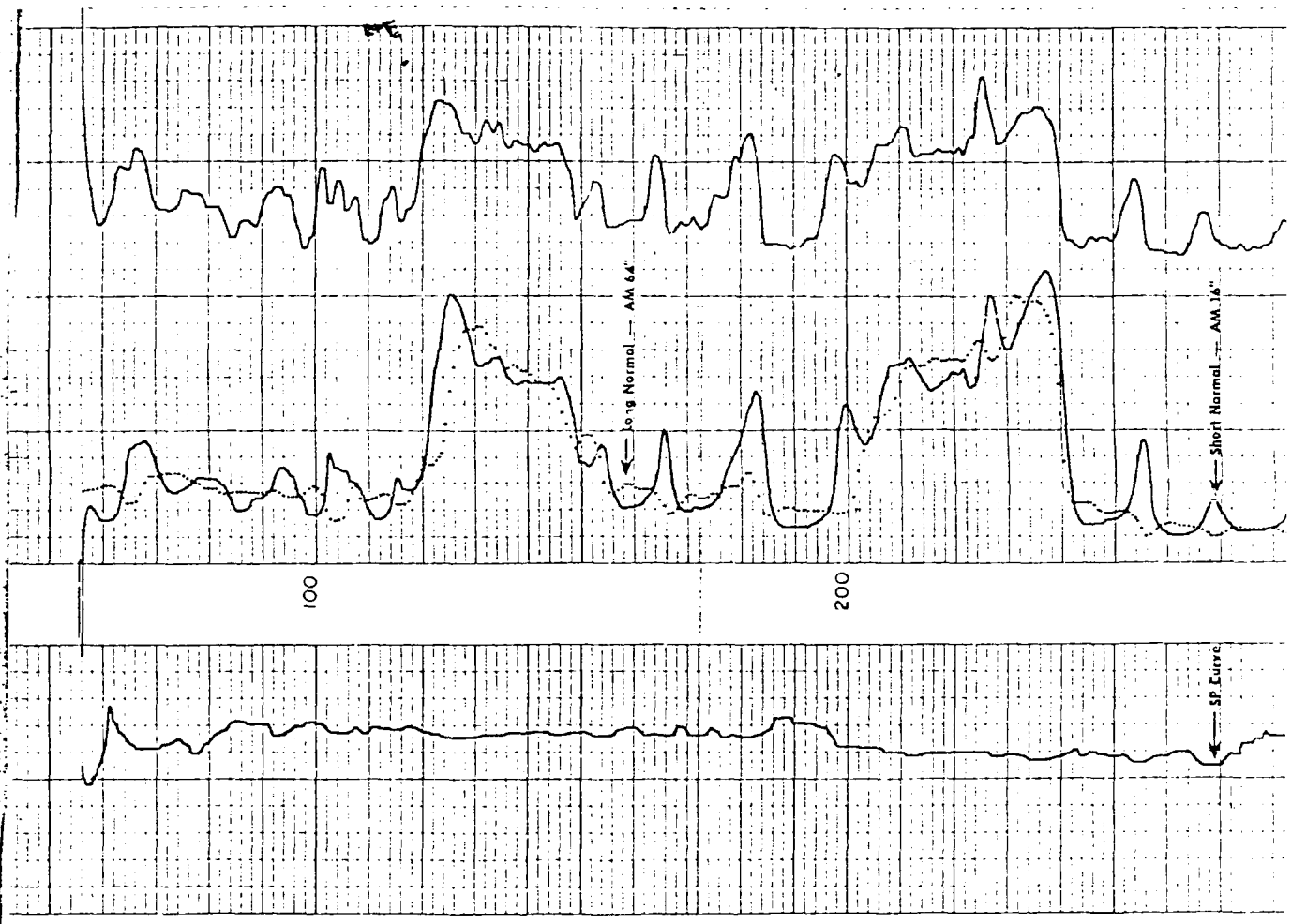
REMARKS.					
Changes in Mud Type or Additional Samples					
Date	Sample No.				
Depth—Driller					
Type Fluid In Hole	Type Log	Depth	Scale Changes Scale Up Hole Scale Down Hole		
Thrs. Visc.					
ph. Fluid Loss					
Source of Sample	ml				
B. @ Mass Temp.	@	"F"	@	"F"	
B. @ Mass Temp.	@	"F"	@	"F"	
R. @ Mass Temp.	@	"F"	@	"F"	
Source: Rst. Rst.					
R. @ DHT	@	"F"	@	"F"	
R. @ DHT	@	"F"	@	"F"	
R. @ DHT	@	"F"	@	"F"	

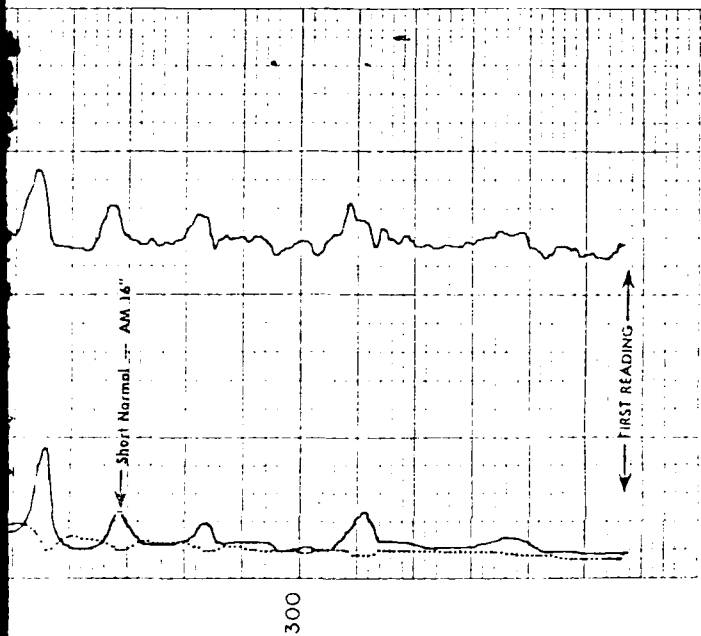
Fulcrum Data

Ful Type	Tool Position	Other
U-6A	I-1 (IN)	T.D.F.
U-6B	I-2 (IN)	P.H.T.

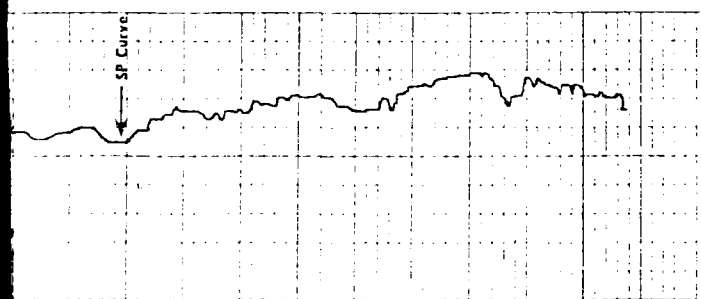
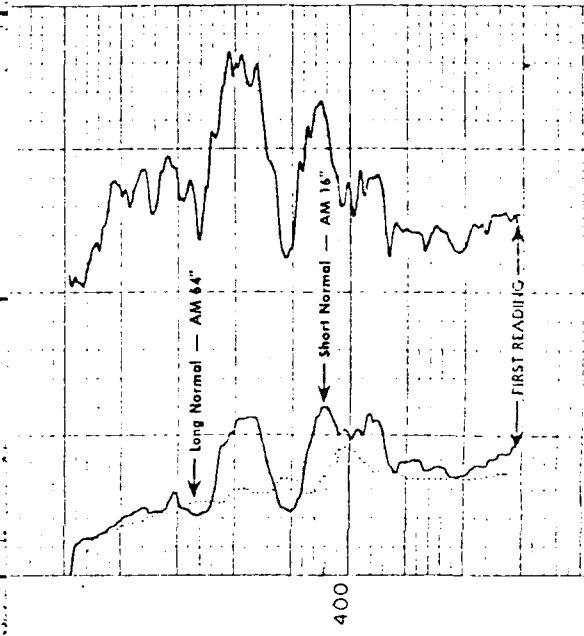
SPONTANEOUS POTENTIAL millivolts	Depth	RESISTIVITY ohms. m'/m	RESISTIVITY ohms. m'/m
	SHORT NORMAL 16 inch	0	100
	LONG NORMAL 64 inch	0	100

SPONTANEOUS POTENTIAL millivolts	<div> <div>+</div> <div>—</div> </div>	pH	RESISTIVITY ohms. m'/m	RESISTANCE Detail Curve
			SHORT NORMAL 16 inch LONG NORMAL 64 inch	

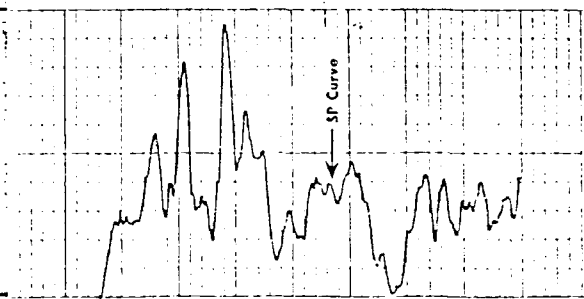




Depth	
Run 1	RESISTIVITY ohms. m'/m
	RESISTIVITY ohms. m'/m
Run 2	SHORT NORMAL 16 inch
	LONG NORMAL 64 inch
	RESISTANCE Detail Curve



Depth	
Run 1	SPONTANEOUS POTENTIAL millivolts
Run 2	



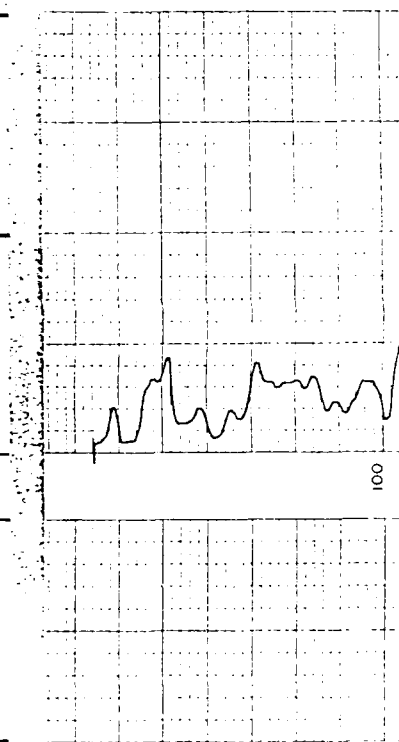
WELL ENGINEERING SURVEYS

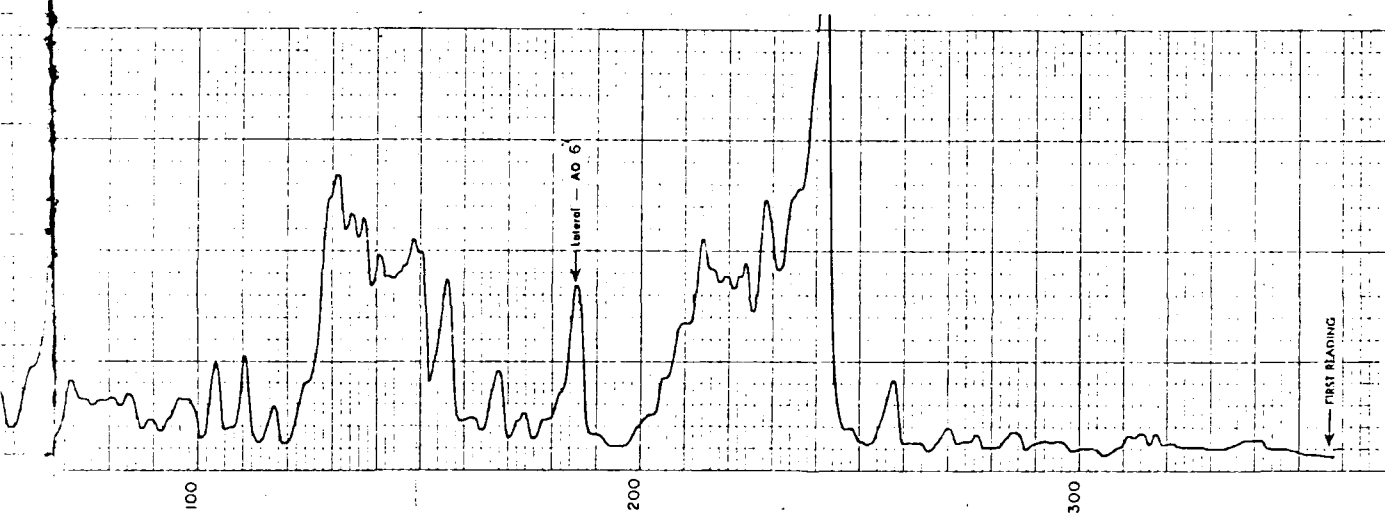
ELECTRIC LOG

FILING NO. 	COMPANY <u>EMERSON ELECTRIC, INC.</u> WELL <u>0 1110</u> FIELD <u>1154 S. 6. E.</u> STATE <u>ARIZONA</u> COUNTY <u>MOHAVE</u>
LOCATION 	OTHER STRINGS <u>10-64 F-1000</u> <u>GAMMA RAY</u> <u>CALIPER</u>
SEC <u>1</u> TWP <u>36N</u> RGE <u>10E</u>	

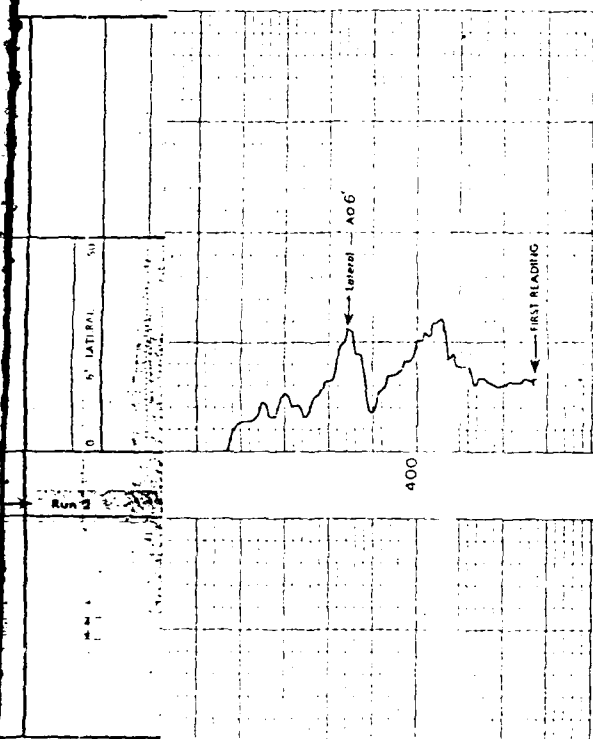
Permanent Datum: <u>W.T.</u> Elev. <u> </u> Log Measured From: <u> </u> PL Above Perm. Datum <u> </u> Drilling Measured From: <u>GL</u>	Elev: <u>X B</u> <u>D.F.</u> <u>CL</u>
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Date	11-7-68 BH	11-14-68	12-11-68	1-11-69	2-11-69	3-11-69	4-11-69	5-11-69	6-11-69	7-11-69	8-11-69	9-11-69	10-11-69	11-11-69	12-11-69	1-11-70	2-11-70	3-11-70	4-11-70	5-11-70	6-11-70	7-11-70	8-11-70	9-11-70	10-11-70	11-11-70	12-11-70	1-11-71	2-11-71	3-11-71	4-11-71	5-11-71	6-11-71	7-11-71	8-11-71	9-11-71	10-11-71	11-11-71	12-11-71	1-11-72	2-11-72	3-11-72	4-11-72	5-11-72	6-11-72	7-11-72	8-11-72	9-11-72	10-11-72	11-11-72	12-11-72	1-11-73	2-11-73	3-11-73	4-11-73	5-11-73	6-11-73	7-11-73	8-11-73	9-11-73	10-11-73	11-11-73	12-11-73	1-11-74	2-11-74	3-11-74	4-11-74	5-11-74	6-11-74	7-11-74	8-11-74	9-11-74	10-11-74	11-11-74	12-11-74	1-11-75	2-11-75	3-11-75	4-11-75	5-11-75	6-11-75	7-11-75	8-11-75	9-11-75	10-11-75	11-11-75	12-11-75	1-11-76	2-11-76	3-11-76	4-11-76	5-11-76	6-11-76	7-11-76	8-11-76	9-11-76	10-11-76	11-11-76	12-11-76	1-11-77	2-11-77	3-11-77	4-11-77	5-11-77	6-11-77	7-11-77	8-11-77	9-11-77	10-11-77	11-11-77	12-11-77	1-11-78	2-11-78	3-11-78	4-11-78	5-11-78	6-11-78	7-11-78	8-11-78	9-11-78	10-11-78	11-11-78	12-11-78	1-11-79	2-11-79	3-11-79	4-11-79	5-11-79	6-11-79	7-11-79	8-11-79	9-11-79	10-11-79	11-11-79	12-11-79	1-11-80	2-11-80	3-11-80	4-11-80	5-11-80	6-11-80	7-11-80	8-11-80	9-11-80	10-11-80	11-11-80	12-11-80	1-11-81	2-11-81	3-11-81	4-11-81	5-11-81	6-11-81	7-11-81	8-11-81	9-11-81	10-11-81	11-11-81	12-11-81	1-11-82	2-11-82	3-11-82	4-11-82	5-11-82	6-11-82	7-11-82	8-11-82	9-11-82	10-11-82	11-11-82	12-11-82	1-11-83	2-11-83	3-11-83	4-11-83
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[illegible][illegible]



SPONTANEOUS POTENTIAL millivolts	RESISTIVITY ohms m/m	
	RESISTIVITY ohms m/m	RESISTIVITY ohms m/m
Run 1	0	50
Run 2	0	50

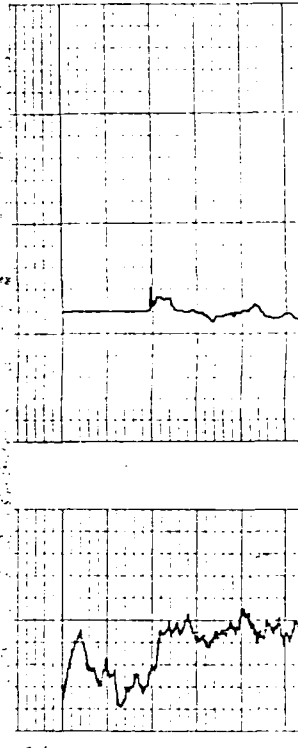


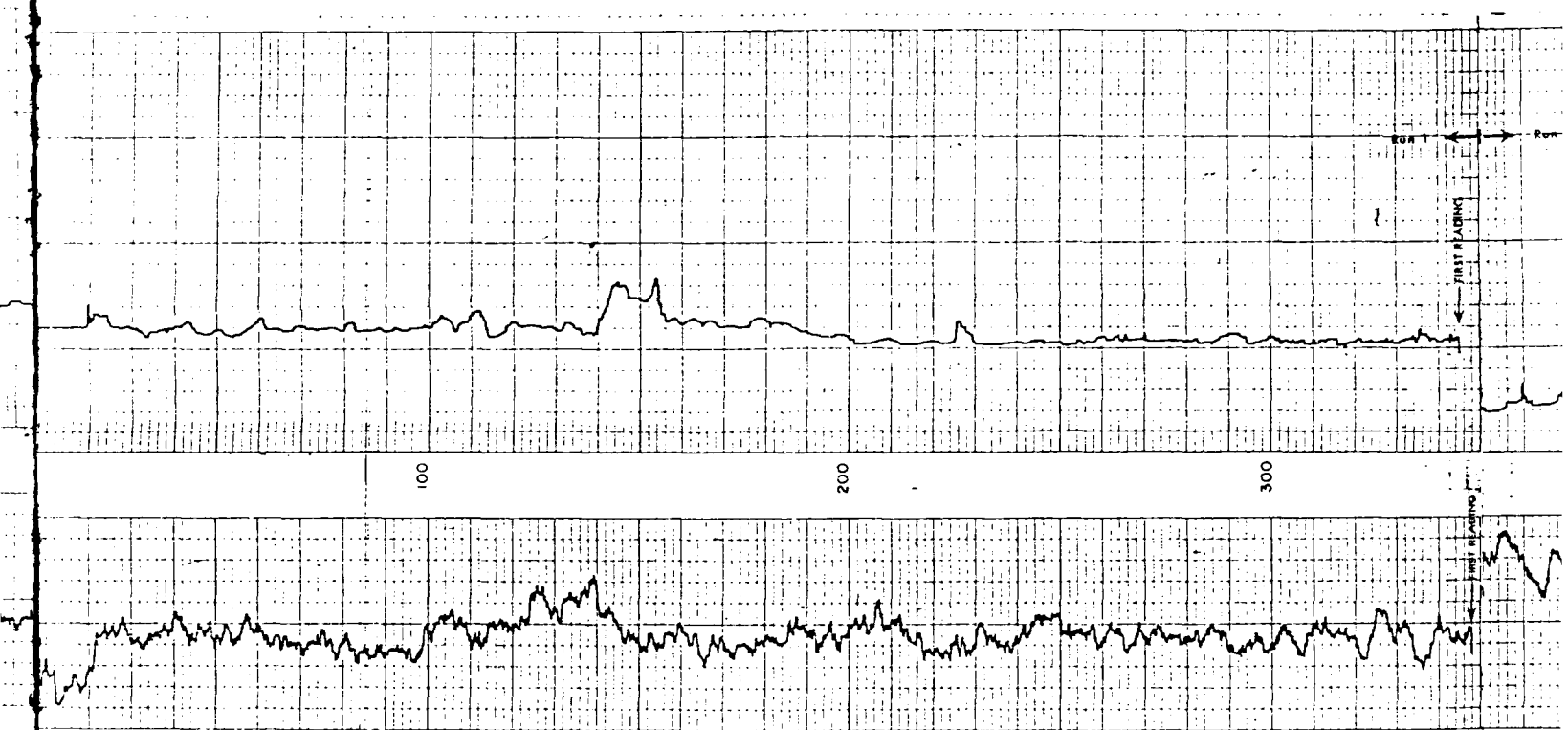
Gamma-Ray Caliper

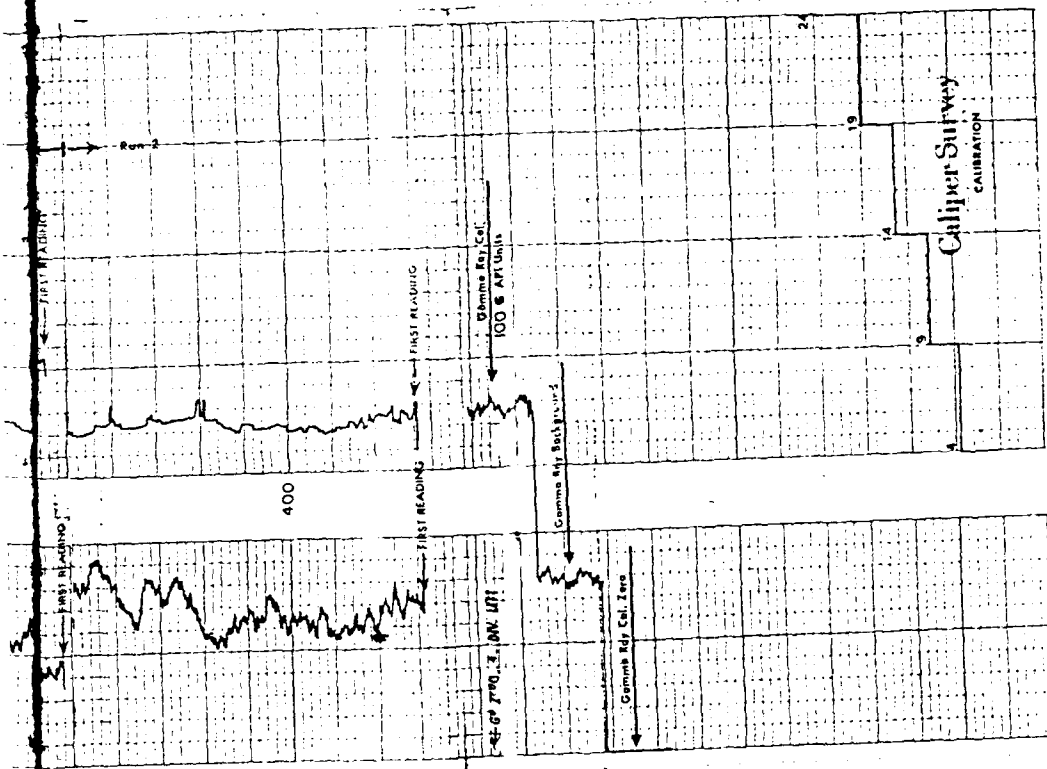
[illegible]

EQUIPMENT DATA									
General Ref					Location				
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2	078	078	078	078	2	078	078	078	078
3	079	079	079	079	3	079	079	079	079
4	080	080	080	080	4	080	080	080	080
5	081	081	081	081	5	081	081	081	081
6	082	082	082	082	6	082	082	082	082
7	083	083	083	083	7	083	083	083	083
8	084	084	084	084	8	084	084	084	084
9	085	085	085	085	9	085	085	085	085
10	086	086	086	086	10	086	086	086	086
11	087	087	087	087	11	087	087	087	087
12	088	088	088	088	12	088	088	088	088
13	089	089	089	089	13	089	089	089	089
14	090	090	090	090	14	090	090	090	090
15	091	091	091	091	15	091	091	091	091
16	092	092	092	092	16	092	092	092	092
17	093	093	093	093	17	093	093	093	093
18	094	094	094	094	18	094	094	094	094
19	095	095	095	095	19	095	095	095	095
20	096	096	096	096	20	096	096	096	096
21	097	097	097	097	21	097	097	097	097
22	098	098	098	098	22	098	098	098	098
23	099	099	099	099	23	099	099	099	099
24	100	100	100	100	24	100	100	100	100
25	101	101	101	101	25	101	101	101	101
26	102	102	102	102	26	102	102	102	102
27	103	103	103	103	27	103	103	103	103
28	104	104	104	104	28	104	104	104	104
29	105	105	105	105	29	105	105	105	105
30	106	106	106	106	30	106	106	106	106
31	107	107	107	107	31	107	107	107	107
32	108	108	108	108	32	108	108	108	108
33	109	109	109	109	33	109	109	109	109
34	110	110	110	110	34	110	110	110	110
35	111	111	111	111	35	111	111	111	111
36	112	112	112	112	36	112	112	112	112
37	113	113	113	113	37	113	113	113	113
38	114	114	114	114	38	114	114	114	114
39	115	115	115	115	39	115	115	115	115
40	116	116	116	116	40	116	116	116	116
41	117	117	117	117	41	117	117	117	117
42	118	118	118	118	42	118	118		

Q	QBAR AT 1 UNITS	DEFTS	CALIBER IN THIRDS
10	115		77







WELL ENGINEERING SURVEYS

ELECTRIC LOG

PAGE NO.		COMPANY		DEVIN DRILLING, INC.																																																																																																																																																																																																																																																																																																																																																																				
WELL		NO.		1011																																																																																																																																																																																																																																																																																																																																																																				
FIELD		LINE APB		1011																																																																																																																																																																																																																																																																																																																																																																				
STATE		CALIFORNIA		COUNTY																																																																																																																																																																																																																																																																																																																																																																				
LOCATION		OTHER SERVICES		CANDID																																																																																																																																																																																																																																																																																																																																																																				
SFC		TYPE		AGE																																																																																																																																																																																																																																																																																																																																																																				
Permanent Datum		G.I.		Elev.																																																																																																																																																																																																																																																																																																																																																																				
Log Measured From		G.I.		PL Above Perm. Datum																																																																																																																																																																																																																																																																																																																																																																				
Driving Measured From		G.I.		Elev.																																																																																																																																																																																																																																																																																																																																																																				
G.I.		G.I.		G.I.																																																																																																																																																																																																																																																																																																																																																																				
<table border="1"> <tr> <td>Size</td> <td>3 1/2" x 8" 25'</td> <td>3 1/2" x 8" 250'</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Exc. Mch.</td> <td>ONE</td> <td>ONE</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Depth - Driller</td> <td>350'</td> <td>350'</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Depth - Logger</td> <td>350'</td> <td>350'</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Wht. Log color</td> <td>350'</td> <td>350'</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Top Log Issue</td> <td>350'</td> <td>350'</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Comp. - Logger</td> <td>350'</td> <td>350'</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Charting - Logger</td> <td>350'</td> <td>350'</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Bit Size</td> <td>7/8"</td> <td>1"</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Type Fluid in Hole</td> <td>WATER</td> <td>MENTORITE</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Depth</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>PM</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>1st</td> <td>2nd</td> <td>3rd</td> <td>4th</td> <td>5th</td> <td>6th</td> </tr> <tr> <td>7th</td> <td>8th</td> <td>9th</td> <td>10th</td> <td>11th</td> <td>12th</td> </tr> <tr> <td>13th</td> <td>14th</td> <td>15th</td> <td>16th</td> <td>17th</td> <td>18th</td> </tr> <tr> <td>19th</td> <td>20th</td> <td>21st</td> <td>22nd</td> <td>23rd</td> <td>24th</td> </tr> <tr> <td>25th</td> <td>26th</td> <td>27th</td> <td>28th</td> <td>29th</td> <td>30th</td> </tr> <tr> <td>31st</td> <td>32nd</td> <td>33rd</td> <td>34th</td> <td>35th</td> <td>36th</td> </tr> <tr> <td>37th</td> <td>38th</td> <td>39th</td> <td>40th</td> <td>41st</td> <td>42nd</td> </tr> <tr> <td>43rd</td> <td>44th</td> <td>45th</td> <td>46th</td> <td>47th</td> <td>48th</td> </tr> <tr> <td>49th</td> <td>50th</td> <td>51st</td> <td>52nd</td> <td>53rd</td> <td>54th</td> </tr> <tr> <td>55th</td> <td>56th</td> <td>57th</td> <td>58th</td> <td>59th</td> <td>60th</td> </tr> <tr> <td>61st</td> <td>62nd</td> <td>63rd</td> <td>64th</td> <td>65th</td> <td>66th</td> </tr> <tr> <td>67th</td> <td>68th</td> <td>69th</td> <td>70th</td> <td>71st</td> <td>72nd</td> </tr> <tr> <td>73rd</td> <td>74th</td> <td>75th</td> <td>76th</td> <td>77th</td> <td>78th</td> </tr> <tr> <td>79th</td> <td>80th</td> <td>81st</td> <td>82nd</td> <td>83rd</td> <td>84th</td> </tr> <tr> <td>85th</td> <td>86th</td> <td>87th</td> <td>88th</td> <td>89th</td> <td>90th</td> </tr> <tr> <td>91st</td> <td>92nd</td> <td>93rd</td> <td>94th</td> <td>95th</td> <td>96th</td> </tr> <tr> <td>97th</td> <td>98th</td> <td>99th</td> <td>100th</td> <td>101st</td> <td>102nd</td> </tr> <tr> <td>103rd</td> <td>104th</td> <td>105th</td> <td>106th</td> <td>107th</td> <td>108th</td> </tr> <tr> <td>109th</td> <td>110th</td> <td>111th</td> <td>112th</td> <td>113th</td> <td>114th</td> </tr> <tr> <td>115th</td> <td>116th</td> <td>117th</td> <td>118th</td> <td>119th</td> <td>120th</td> </tr> <tr> <td>121st</td> <td>122nd</td> <td>123rd</td> <td>124th</td> <td>125th</td> <td>126th</td> </tr> <tr> <td>127th</td> <td>128th</td> <td>129th</td> <td>130th</td> <td>131st</td> <td>132nd</td> </tr> <tr> <td>133rd</td> <td>134th</td> <td>135th</td> <td>136th</td> <td>137th</td> <td>138th</td> </tr> <tr> <td>139th</td> <td>140th</td> <td>141st</td> <td>142nd</td> <td>143rd</td> <td>144th</td> </tr> <tr> <td>145th</td> <td>146th</td> <td>147th</td> <td>148th</td> <td>149th</td> <td>150th</td> </tr> <tr> <td>151st</td> <td>152nd</td> <td>153rd</td> <td>154th</td> <td>155th</td> <td>156th</td> </tr> <tr> <td>157th</td> <td>158th</td> <td>159th</td> <td>160th</td> <td>161st</td> <td>162nd</td> </tr> <tr> <td>163rd</td> <td>164th</td> <td>165th</td> <td>166th</td> <td>167th</td> <td>168th</td> </tr> <tr> <td>169th</td> <td>170th</td> <td>171st</td> <td>172nd</td> <td>173rd</td> <td>174th</td> </tr> <tr> <td>175th</td> <td>176th</td> <td>177th</td> <td>178th</td> <td>179th</td> <td>180th</td> </tr> <tr> <td>181st</td> <td>182nd</td> <td>183rd</td> <td>184th</td> <td>185th</td> <td>186th</td> </tr> <tr> <td>187th</td> <td>188th</td> <td>189th</td> <td>190th</td> <td>191st</td> <td>192nd</td> </tr> <tr> <td>193rd</td> <td>194th</td> <td>195th</td> <td>196th</td> <td>197th</td> <td>198th</td> </tr> <tr> <td>199th</td> <td>200th</td> <td>201st</td> <td>202nd</td> <td>203rd</td> <td>204th</td> </tr> <tr> <td>205th</td> <td>206th</td> <td>207th</td> <td>208th</td> <td>209th</td> <td>210th</td> </tr> <tr> <td>211st</td> <td>212nd</td> <td>213th</td> <td>214th</td> <td>215th</td> <td>216th</td> </tr> <tr> <td>217th</td> <td>218th</td> <td>219th</td> <td>220th</td> <td>221st</td> <td>222nd</td> </tr> <tr> <td>223rd</td> <td>224th</td> <td>225th</td> <td>226th</td> <td>227th</td> <td>228th</td> </tr> <tr> <td>229th</td> <td>230th</td> <td>231st</td> <td>232nd</td> <td>233rd</td> <td>234th</td> </tr> <tr> <td>235th</td> <td>236th</td> <td>237th</td> <td>238th</td> <td>239th</td> <td>240th</td> </tr> <tr> <td>241st</td> <td>242nd</td> <td>243rd</td> <td>244th</td> <td>245th</td> <td>246th</td> </tr> <tr> <td>247th</td> <td>248th</td> <td>249th</td> <td>250th</td> <td>251st</td> <td>252nd</td> </tr> <tr> <td>253rd</td> <td>254th</td> <td>255th</td> <td>256th</td> <td>257th</td> <td>258th</td> </tr> <tr> <td>259th</td> 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Mch.	ONE	ONE				Depth - Driller	350'	350'				Depth - Logger	350'	350'				Wht. Log color	350'	350'				Top Log Issue	350'	350'				Comp. - Logger	350'	350'				Charting - Logger	350'	350'				Bit Size	7/8"	1"				Type Fluid in Hole	WATER	MENTORITE				Depth	1	2	3	4	5	PM	1	2	3	4	5	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st	32nd	33rd	34th	35th	36th	37th	38th	39th	40th	41st	42nd	43rd	44th	45th	46th	47th	48th	49th	50th	51st	52nd	53rd	54th	55th	56th	57th	58th	59th	60th	61st	62nd	63rd	64th	65th	66th	67th	68th	69th	70th	71st	72nd	73rd	74th	75th	76th	77th	78th	79th	80th	81st	82nd	83rd	84th	85th	86th	87th	88th	89th	90th	91st	92nd	93rd	94th	95th	96th	97th	98th	99th	100th	101st	102nd	103rd	104th	105th	106th	107th	108th	109th	110th	111th	112th	113th	114th	115th	116th	117th	118th	119th	120th	121st	122nd	123rd	124th	125th	126th	127th	128th	129th	130th	131st	132nd	133rd	134th	135th	136th	137th	138th	139th	140th	141st	142nd	143rd	144th	145th	146th	147th	148th	149th	150th	151st	152nd	153rd	154th	155th	156th	157th	158th	159th	160th	161st	162nd	163rd	164th	165th	166th	167th	168th	169th	170th	171st	172nd	173rd	174th	175th	176th	177th	178th	179th	180th	181st	182nd	183rd	184th	185th	186th	187th	188th	189th	190th	191st	192nd	193rd	194th	195th	196th	197th	198th	199th	200th	201st	202nd	203rd	204th	205th	206th	207th	208th	209th	210th	211st	212nd	213th	214th	215th	216th	217th	218th	219th	220th	221st	222nd	223rd	224th	225th	226th	227th	228th	229th	230th	231st	232nd	233rd	234th	235th	236th	237th	238th	239th	240th	241st	242nd	243rd	244th	245th	246th	247th	248th	249th	250th	251st	252nd	253rd	254th	255th	256th	257th	258th	259th	260th	261st	262nd	263rd	264th	265th	266th	267th	268th	269th	270th	271st	272nd	273rd	274th	275th	276th	277th	278th	279th	280th	281st	282nd	283rd
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7th	8th	9th	10th	11th	12th																																																																																																																																																																																																																																																																																																																																																																			
13th	14th	15th	16th	17th	18th																																																																																																																																																																																																																																																																																																																																																																			
19th	20th	21st	22nd	23rd	24th																																																																																																																																																																																																																																																																																																																																																																			
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37th	38th	39th	40th	41st	42nd																																																																																																																																																																																																																																																																																																																																																																			
43rd	44th	45th	46th	47th	48th																																																																																																																																																																																																																																																																																																																																																																			
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103rd	104th	105th	106th	107th	108th																																																																																																																																																																																																																																																																																																																																																																			
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163rd	164th	165th	166th	167th	168th																																																																																																																																																																																																																																																																																																																																																																			
169th	170th	171st	172nd	173rd	174th																																																																																																																																																																																																																																																																																																																																																																			
175th	176th	177th	178th	179th	180th																																																																																																																																																																																																																																																																																																																																																																			
181st	182nd	183rd	184th	185th	186th																																																																																																																																																																																																																																																																																																																																																																			
187th	188th	189th	190th	191st	192nd																																																																																																																																																																																																																																																																																																																																																																			
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217th	218th	219th	220th	221st	222nd																																																																																																																																																																																																																																																																																																																																																																			
223rd	224th	225th	226th	227th	228th																																																																																																																																																																																																																																																																																																																																																																			
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[illegible]

SPONTANEOUS POTENTIAL millivolt	Depth	RESISTIVITY ohm-ft. m'/m	RESISTIVITY ohm-ft. m'/m
		HOR. NORMAL 16 inch	
		LOG	
		LONG. NORMAL 64 inch	
		LOG	
			RESISTANCE Dipal Curve

